AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE	OF	PAGES
	1		4

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. *(If applicable)*
0005	9 SEP 2003		

6. ISSUED BY	CODE	7. ADMINISTERED BY *(If other than Item 6)*	CODE
US ARMY ENGINEER DISTRICT, FORT WORTH ATTN: CESWF-CT (RM 2A19) PO BOX 17300 FORT WORTH, TX 76102-0300			

8. NAME AND ADDRESS OF CONTRACTOR *(No., street, county, State and ZIP Code)*	(X)	9A. AMENDMENT OF SOLICIATION NO.
	☒	DACA63-03-B-0008
		9B. DATED *(SEE ITEM 11)* 11 AUGUST 2003
	☐	10A. MODIFICATION OF CONTRACT/ORDER NO.
		10B. DATED *(SEE ITEM 11)*
CODE / FACILITY CODE		

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☒ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☒ is extended, ☐ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a)By completing items 8 and 15, and returning 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment your desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA *(If required)*

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	
	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: *(Specify authority)* THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES *(such as changes in paying office, appropriation date, etc.)* SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER *(Specify type of modification and authority)*

E. IMPORTANT: Contractor ☐ is not, ☐ is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (*Organized by UCF section headings, including solicitation/contract subject matter where feasible.)*

The Solicitation for Water System Upgrade, Fort Bliss, Texas, is amended as follows:

See Continuation Sheets.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER *(Type or print)*		16A. NAME AND TITLE OF CONTRACTING OFFICER *(Type or print)*	
15B. CONTRACTOR/OFFEROR *(Signature of person authorized to sign)*	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA *(Signature of Contracting Officer)*	16C. DATE SIGNED

Item 14. Continued.

CHANGE TO BID OPENING DATE

1. Standard Form 1442, First Page, Item No. 13.A.- In the second line, change the bid opening date from "12 September 2003, 2 p.m." to **"19 September 2003, 2 p.m.".**

CHANGES TO THE SPECIFICATIONS

2. Replacement Sections: Replace the following sections with the accompanying new sections of the same number and title, bearing the notation "ACCOMPANYING AMENDMENT NO. 0005 TO SOLICITATION NO. DACA63-03-B-0008:"

01355	ENVIRONMENTAL PROTECTION
02220	DEMOLITION
09965A	PAINTING: HYDRAULIC STRUCTURES
13281A	LEAD HAZARD CONTROL ACTIVITIES
16488	INSTRUMENTATION AND CONTROLS

3. Added Reports: Add the following accompanying report.

Limited Lead Sampling Report dated May 12, 2003
Insert this report behind Section 13281A LEAD HAZARD CONTROL ACTIVITIES.

4. New Sections - Add the following accompanying new section, bearing the notation "ACCOMPANYING AMENDMENT NO. 0005TO SOLICITATION NO. DACA63-03-B-0008:"

13284A	REMOVAL, RECYLING, AND DISPOSAL OF REGULATED MATERIAL

CHANGES TO THE DRAWINGS

5. Reference Sequence No. 011; Drawing C-501, Work Area A: Replace Note #2 on Detail #3 as follows: "Contractor shall flow test each fire hydrant and paint each fire hydrant with color codes in accordance with NFPA 291. Stencil fire hydrant identification number on new hydrants as directed by the Contracting Officer."

6. Reference Sequence No. 050; Drawing S-503, Work Area C, Details #2 and #3: The steel to ductile iron transition fitting shall be an isolating fitting.

7. Reference Sequence No. 054; Drawing C-101, Work Area D:

   A. Delete construction Note #1 and replace with the following Note #1: "Double tee reservoir roofing is to be demolished or at Contractor's option may be salvaged. If salvaged, the tee members remain Contractor's property."

   B. At sheet margin grid marks 6-C, delete leadered note: "Remove And Salvage Double Tee Roof".

   C. At sheet margin grid marks 8-F, delete leadered note: "Remove Walls To Bottom Slab - Floor Slab To Remain" and substitute therefor: "Remove Walls And Bottom Slab In Entirety".

8. Reference Sequence No. 063; Drawing S-503, Work Area D, Details #2 and #3: The steel to ductile iron transition fitting shall be an isolating fitting.

9. Reference Sequence No. 067; Drawing C-101, Work Area E: Add painting note to Detail #2 as follows: "Lead paint abatement will be required for this tank. See Specification Section 13281A Lead Hazard Control Activities for Limited Lead Sampling Report."

10. Reference Sequence No. 087; Drawing E-501, Work Area F, Detail #2:

    A. On limit switch "ZS-1" change label "N.C." to "VALVE OPENED", change label "N.O." to "VALVE CLOSED", add Keyed Note "2" marker at limit switch.

    B. At "KEYED NOTE:" at bottom of detail add Keyed Note Number "2" with description "ZS-1 is a limit switch at the control valve and indicates the opened or closed position status of the control valve."

    C. On third rung of logic delete description at right of schematic that reads: "ENERGIZE TO OPEN CONTROL VALVE". Replace with: "ENERGIZE TO START PUMP MOTOR".

    D. At bottom of detail add: "NOTE: ALL CONTACTS ARE SHOWN IN DEENERGIZED POSITION".

11. Reference Sequence No. 125; Drawing E-503, Work Area H, Detail #1

    A. On limit switch "ZS-1" change label "N.C." to "VALVE OPENED", change label "N.O." to "VALVE CLOSED", add Keyed Note "2" marker at limit switch.

    B. At "KEYED NOTE:" at bottom of detail add Keyed Note Number "2" with description "ZS-1 is a limit switch at the control valve and indicates the opened or closed position status of the control valve."

    C. On third rung of logic delete description at right of schematic that reads: "ENERGIZE TO OPEN CONTROL VALVE". Replace with: "ENERGIZE TO START PUMP MOTOR".

    D. At bottom of detail add: "NOTE: ALL CONTACTS ARE SHOWN IN DEENERGIZED POSITION".

12. Reference Sequence No. 150; Drawing C-501, Work Area K, Detail #6: The steel to ductile iron transition fitting shall be an isolating fitting.

13. Reference Sequence No. 168; Drawing E-503, Work Area L, Detail #1:

    A. On limit switch "ZS-1" change label "N.C." to "VALVE OPENED", change label "N.O." to "VALVE CLOSED", add Keyed Note "2" marker at limit switch.

    B. At "KEYED NOTE:" at bottom of detail add Keyed Note Number "2" with description "ZS-1 is a limit switch at the control valve and indicates the opened or closed position status of the control valve."

    C. On third rung of logic delete description at right of schematic that reads: "ENERGIZE TO OPEN CONTROL VALVE". Replace with: "ENERGIZE TO START PUMP MOTOR".

    D. At bottom of detail add: "NOTE: ALL CONTACTS ARE SHOWN IN DEENERGIZED POSITION".

14. Reference Sequence No. 175; Drawing E-503, Work Area M, Detail #1:

    A. On limit switch "ZS-1" change label "N.C." to "VALVE OPENED", change label "N.O." to "VALVE CLOSED", add Keyed Note "2" marker at limit switch.

    B. At "KEYED NOTE:" at bottom of detail add Keyed Note Number "2" with description "ZS-1 is a

limit switch at the control valve and indicates the opened or closed position status of the control valve."

C. On third rung of logic delete description at right of schematic that reads: "ENERGIZE TO OPEN CONTROL VALVE". Replace with: "ENERGIZE TO START PUMP MOTOR".

D. At bottom of detail add: "NOTE: ALL CONTACTS ARE SHOWN IN DEENERGIZED POSITION".

END OF AMENDMENT

SECTION 01355

ENVIRONMENTAL PROTECTION
AMENDMENT #0005

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(1996) U.S. Army Corps of Engineers Safety and Health Requirements Manual
WETLAND MANUAL	Corps of Engineers Wetlands Delineation Manual Technical Report Y-87-1

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

33 CFR 328	Definitions of Waters of the United States
40 CFR 152 - 186	Pesticide Programs
40 CFR 260	Hazardous Waste Management System: General
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 279	Standards for the Management of Used Oil
40 CFR 302	Designation, Reportable Quantities, and Notification
40 CFR 355	Emergency Planning and Notification
40 CFR 68	Chemical Accident Prevention Provisions
49 CFR 171 - 178	Hazardous Materials Regulations

1.2 DEFINITIONS

1.2.1 Environmental Pollution and Damage

Environmental pollution and damage is the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the environment aesthetically, culturally and/or historically.

1.2.2 Environmental Protection

Environmental protection is the prevention/control of pollution and habitat disruption that may occur to the environment during construction. The control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.2.3 Contractor Generated Hazardous Waste

Contractor generated hazardous waste means materials that, if abandoned or disposed of, may meet the definition of a hazardous waste. These waste streams would typically consist of material brought on site by the Contractor to execute work, but are not fully consumed during the course of construction. Examples include, but are not limited to, excess paint thinners (i.e. methyl ethyl ketone, toluene etc.), waste thinners,excess paints, excess solvents, waste solvents, and excess pesticides, and contaminated pesticide equipment rinse water.

1.2.4 Land Application for Discharge Water

The term "Land Application" for discharge water implies that the Contractor shall discharge water at a rate which allows the water to percolate into the soil. No sheeting action, soil erosion, discharge into storm sewers, discharge into defined drainage areas, or discharge into the "waters of the United States" shall occur. Land Application shall be in compliance with all applicable Federal, State, and local laws and regulations.

1.2.5 Pesticide

Pesticide is defined as any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, or intended for use as a plant regulator, defoliant or desiccant.

1.2.6 Pests

The term "pests" means arthropods, birds, rodents, nematodes, fungi, bacteria, viruses, algae, snails, marine borers, snakes, weeds and other organisms (except for human or animal disease-causing organisms) that adversely affect readiness, military operations, or the well-being of personnel and animals; attack or damage real property, supplies, equipment, or vegetation; or are otherwise undesirable.

1.2.7 Surface Discharge

The term "Surface Discharge" implies that the water is discharged with possible sheeting action and subsequent soil erosion may occur. Waters that are surface discharged may terminate in drainage ditches, storm sewers,creeks, and/or "waters of the United States" and would require a permit to discharge water from the governing agency.

1.2.8 Waters of the United States

All waters which are under the jurisdiction of the Clean Water Act, as defined in 33 CFR 328.

1.2.9 Wetlands

Wetlands means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, and bogs. Official determination of whether or not an area is classified as a wetland must be done in accordance with WETLAND MANUAL.

1.3 GENERAL REQUIREMENTS

The Contractor shall minimize environmental pollution and damage that may occur as the result of construction operations. The environmental resources within the project boundaries and those affected outside the limits of permanent work shall be protected during the entire duration of this contract. The Contractor shall comply with all applicable environmental Federal, State, and local laws and regulations. The Contractor shall be responsible for any delays resulting from failure to comply with environmental laws and regulations.

1.4 SUBCONTRACTORS

The Contractor shall ensure compliance with this section by subcontractors.

1.5 PAYMENT

No separate payment will be made for work covered under this section. The Contractor shall be responsible for obtaining and payment of fees associated with environmental permits, application, and/or notices for items such as paint booths, welding, brake and clutch service, oil water separator, fuel storage tank, on-site septic system, storm water construction permits, utilties, digging, Texas Department of Health (TDH) Demolition/Renovation Notification Form, and occupational safety and health.. In addition, the Contractor shall be responsible for all licenses and permits required for workers, sub-contractors, and transporters. All costs associated with this section shall be included in the contract price. The Contractor shall be responsible for payment of all fines/fees for violation or non-compliance with Federal, State, Regional and local laws and regulations.

1.6 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Environmental Protection Plan; G, RE

The environmental protection plan.

Storm Water Pollution Prevention Plan;

Submit a copy of the Contractor's Pollution Prevention Plan (SWPPP), including both narrative and the EROSION AND SEDIMENT CONTROL drawings, developed in accordance with PART 1 paragraph

"Storm Water Pollution Prevention Plan" and the Environmental Protection Agency's storm water discharge regulations, and the Section 01421 BASIC STORM WATER POLLUTION PREVENTION PLAN.

SD-02 Shop Drawings

Hazardous Substance Reporting;

The Contractor shall submit a copy of the attached Emergency Planning and Community Right to Know notification and other reports to the Contracting Officer and to the Facility Emergency Coordinator (FEC) as specified in PART 3 paragraph EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW REQUIREMENTS.

1.7 ENVIRONMENTAL PROTECTION PLAN

Prior to commencing construction activities or delivery of materials to the site, the Contractor shall submit an Environmental Protection Plan for review and approval by the Contracting Officer. The purpose of the Environmental Protection Plan is to present a comprehensive overview of known or potential environmental issues which the Contractor must address during construction. Issues of concern shall be defined within the Environmental Protection Plan as outlined in this section. The Contractor shall address each topic at a level of detail commensurate with the environmental issue and required construction task(s). Topics or issues which are not identified in this section, but which the Contractor considers necessary, shall be identified and discussed after those items formally identified in this section. Prior to submittal of the Environmental Protection Plan, the Contractor shall meet with the Contracting Officer for the purpose of discussing the implementation of the initial Environmental Protection Plan; possible subsequent additions and revisions to the plan including any reporting requirements; and methods for administration of the Contractor's Environmental Plans. The Environmental Protection Plan shall be current and maintained onsite by the Contractor.

1.7.1 Compliance

No requirement in this Section shall be construed as relieving the Contractor of any applicable Federal, State, and local environmental protection laws and regulations. During Construction, the Contractor shall be responsible for identifying, implementing, and submitting for approval any additional requirements to be included in the Environmental Protection Plan.

1.7.2 Contents

The environmental protection plan shall include, but shall not be limited to, the following:

a. Name(s) of person(s) within the Contractor's organization who is(are) responsible for ensuring adherence to the Environmental Protection Plan.

b. Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site, if applicable.

c. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel.

d. Description of the Contractor's environmental protection personnel training program.

e. An erosion and sediment control plan which identifies the type and location of the erosion and sediment controls to be provided. The plan shall include monitoring and reporting requirements to assure that the control measures are in compliance with the erosion and sediment control plan, Federal, State, and local laws and regulations. A Storm Water Pollution Prevention Plan (SWPPP) may be substituted for this plan. Include name(s) and qualifications of person(s) responsible for monitoirng compliance of erosion and sediment control for the duration of the construction until final accetance by the Contracting Officer representative (COR).

f. Drawings showing locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on the site.

g. Traffic control plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Plan shall include measures to minimize the amount of mud transported onto paved public roads by vehicles or runoff.

h. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Plan should include measures for marking the limits of use areas including methods for protection of features to be preserved within authorized work areas.

i. Drawing showing the location of borrow areas.

j. The Spill Control plan shall include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by 40 CFR 68, 40 CFR 302, 40 CFR 355, and/or regulated under State or Local laws and regulations. The Spill Control Plan supplements the requirements of EM 385-1-1. This plan shall include as a minimum:

1. The name of the individual who will report any spills or hazardous substance releases and who will follow up with complete documentation. This individual shall immediately notify the Contracting Officer and Facility Environmental Office in addition to the legally required Federal, State, and local reporting channels (including the National Response Center 1-800-424-8802) if a reportable quantity is released to the environment. The plan shall contain a list of the required reporting channels and telephone numbers.

2. The name and qualifications of the individual who will be responsible for implementing and supervising the containment and cleanup.

3. Training requirements for Contractor's personnel and methods of accomplishing the training.

4. A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential

hazard(s) identified.

5. The names and locations of suppliers of containment materials and locations of additional fuel oil recovery, cleanup, restoration, and material-placement equipment available in case of an unforeseen spill emergency.

6. The methods and procedures to be used for expeditious contaminant cleanup.

k. A non-hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris. The plan shall include schedules for disposal. The Contractor shall identify any subcontractors responsible for the transportation and disposal of solid waste. Licenses or permits shall be submitted for solid waste disposal sites that are not a commercial operating facility. Evidence of the disposal facility's acceptance of the solid waste shall be attached to this plan during the construction. The Contractor shall attach a copy of each of the Non-hazardous Solid Waste Diversion Reports to the disposal plan. The report shall be submitted on the first working day after the first quarter that non-hazardous solid waste has been disposed and/or diverted and shall be for the previous quarter (e.g. the first working day of January, April, July, and October). The report shall indicate the total amount of waste generated and total amount of waste diverted in cubic yards or tons along with the percent that was diverted.

l. A recycling and solid waste minimization plan with a list of measures to reduce consumption of energy and natural resources. The plan shall detail the Contractor's actions to comply with and to participate in Federal, State, Regional, and local government sponsored recycling programs to reduce the volume of solid waste at the source. **[AM #0005] The uncontaminated concrete from demolition shall be recycled at a local facility. The painted and unpainted metal components from demolition shall be recycled at a scrap metal facility. The Contraactor shall have a statment from the metal recycling facility that the painted components or non-painted metal components that may contain other regulated materials shall not be reused at any low income communities. The painted metal components shall be packaged to avoid release of lead-based paint. A delivery receipt shall be obtained for each recycled item. As a minimum, two copies of letter report (including the delivery receipts, and statement of no reuse of regulated materials) shall be prepared to describe the types and quantities of recycled materials, and submit to the COR. One copy of the letter report shall be provided to Fort Bliss DOE (POC: Ms Lilly Lenhart).**

m. An air pollution control plan detailing provisions to assure that dust, debris, materials, trash, etc., do not become air borne and travel off the project site. Permits shall be obtained in accordance with applicable Federal and state regulations for the user. (For Texas: reference Texas Natural Resource Conservation Commission (TNRCC) Rule 116.111 or exempt facility to 30 TAC Chapter 106). Applications for permits, notifications, and registrations shall be reviewed by the an authorized personnel of the permit facility.

n. A contaminant prevention plan that: identifies potentially hazardous substances to be used on the job site; identifies the intended actions to prevent introduction of such materials into the

air, water, or ground; and details provisions for compliance with Federal, State, and local laws and regulations for storage and handling of these materials. In accordance with EM 385-1-1, a copy of the Material Safety Data Sheets (MSDS) and the maximum quantity of each hazardous material to be on site at any given time shall be included in the contaminant prevention plan. As new hazardous materials are brought on site or removed from the site, the plan shall be updated.

o. A waste water management plan that identifies the methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines. If a settling/retention pond is required, the plan shall include the design of the pond including drawings, removal plan, and testing requirements for possible pollutants. If land application will be the method of disposal for the waste water, the plan shall include a sketch showing the location for land application along with a description of the pretreatment methods to be implemented. If surface discharge will be the method of disposal, a copy of the permit and associated documents shall be included as an attachment prior to discharging the waste water. If disposal is to a sanitary sewer, the plan shall include documentation that the Waste Water Treatment Plant Operator has approved the flow rate, volume, and type of discharge.

p. A historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands known to be on the project site: and/or identifies procedures to be followed if historical archaeological, cultural resources, biological resources and wetlands not previously known to be onsite or in the area are discovered during construction. The plan shall include methods to assure the protection of known or discovered resources and shall identify lines of communication between Contractor personnel and the Contracting Officer.

q. A pesticide treatment plan shall be included and updated, as information becomes available. The plan shall include: sequence of treatment, dates, times, locations, pesticide trade name, EPA registration numbers, authorized uses, chemical composition, formulation, original and applied concentration, application rates of active ingredient (i.e. pounds of active ingredient applied), equipment used for application and calibration of equipment. The Contractor is responsible for Federal, State, Regional and Local pest management record keeping and reporting requirements as well as any additional specific requirements.

1.7.3 Appendix

Copies of all environmental permits, permit application packages, approvals to construct, notifications, certifications, reports, and termination documents shall be attached,as an appendix, to the Environmental Protection Plan.

1.8 PROTECTION FEATURES

This paragraph supplements the Contract Clause PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS. Prior to start of any onsite construction activities, the Contractor and the

Contracting Officer shall make a joint condition survey. Immediately following the survey, the Contractor shall prepare a brief report including a plan describing the features requiring protection under the provisions of the Contract Clauses, which are not specifically identified on the drawings as environmental features requiring protection along with the condition of trees, shrubs and grassed areas immediately adjacent to the site of work and adjacent to the Contractor's assigned storage area and access route(s), as applicable. This survey report shall be signed by both the the Contractor and the Contracting Officer upon mutual agreement as to its accuracy and completeness. The Contractor shall protect those environmental features included in the survey report and any indicated on the drawings, regardless of interference which their preservation may cause to the Contractor's work under the contract.

1.9 SPECIAL ENVIRONMENTAL REQUIREMENTS

The Contractor shall comply with the special environmental requirements and included at the end of this section.

1.10 ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

Any deviations, requested by the Contractor, from the drawings, plans, and specifications which may have an environmental impact will be subject to approval by the Contracting Officer and may require an extended review, processing, and approval time. The Contracting Officer reserves the right to disapprove alternate methods, even if they are more cost effective, if the Contracting Officer determines that the proposed alternate method will have an adverse environmental impact.

1.11 NOTIFICATION

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with Federal, State, or local environmental laws or regulations, permits, and other elements of the Contractor's Environmental Protection plan. The Contractor shall, after receipt of such notice, inform the Contracting Officer of the proposed corrective action and take such action when approved by the Contracting Officer. The Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions shall be granted or equitable adjustments allowed to the Contractor for any such suspensions. This is in addition to any other actions the Contracting Officer may take under the contract, or in accordance with the Federal Acquisition Regulation or Federal Law.

1.11.1 Demolition

The Contractor shall notify EPA (per 40 CRF 61 Subpart M) or the appropriate regulatory agency, or in Texas, the Texas Department of Health, in writing, at least 10 working days prior to commencement of demolition work. The Contractor shall prepare the "Demolition/Renovation Notification Form" and obtain signature of an authorized person from the building (to be demolished) owner's environmental office. The Contractor shall allow at least 10 working days for obtaining signature from the authorized person. The Contractor is responsible to mail the signed notification form by certified mail with return receipt requested. A copy of the signed notification and a copy of the return receipt shall be provided to the Contracting Officer Representative (COR) and the authorized person. In Texas, in compliance the Texas Asbestos Hazard Protection Rules (TAHPA), Section 295.61, this notification process is necessary prior to demolition

of building structures with or without Asbestos Containing Material. The notification form is available on http://www.tdh.texas.gov/beh/asbestos/1298newform.doc

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 ENVIRONMENTAL PERMITS AND COMMITMENTS

The Contractor shall be responsible for obtaining and complying with all environmental permits and commitments required by Federal, State, Regional, and local environmental laws and regulations.

3.2 LAND RESOURCES

The Contractor shall confine all activities to areas defined by the drawings and specifications. Prior to the beginning of any construction, the Contractor shall identify any land resources to be preserved within the work area. Except in areas indicated on the drawings or specified to be cleared, the Contractor shall not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and land forms without approval. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. The Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs. Stone, soil, or other materials displaced into uncleared areas shall be removed by the Contractor.

3.2.1 Work Area Limits

Prior to commencing construction activities, the Contractor shall mark the areas that need not be disturbed under this contract. Isolated areas within the general work area which are not to be disturbed shall be marked or fenced. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted during darkness, any markers shall be visible in the dark. The Contractor's personnel shall be knowledgeable of the purpose for marking and/or protecting particular objects.

3.2.2 Landscape

Trees, shrubs, vines, grasses, land forms and other landscape features indicated and defined on the drawings to be preserved shall be clearly identified by marking, fencing, or wrapping with boards, or any other approved techniques. The Contractor shall restore landscape features damaged or destroyed during construction operations outside the limits of the approved work area.

3.2.3 Erosion and Sediment Controls

The Contractor shall be responsible for providing erosion and sediment control measures in accordance with Federal, State, and local laws and regulations. The erosion and sediment controls selected and maintained by the Contractor shall be such that water quality standards are not violated as a result of the Contractor's construction activities. The area of bare soil exposed at any one time by construction operations should be kept to a

minimum. The Contractor shall construct or install temporary and permanent erosion and sediment control best management practices (BMPs) as indicated on the drawings and as specified in Section 01356 STORM WATER POLLUTION PREVENTION MEASURES. BMPs may include, but not be limited to, vegetation cover, stream bank stabilization, slope stabilization, silt fences, construction of terraces, interceptor channels, sediment traps, inlet and outfall protection, diversion channels, and sedimentation basins. The Contractor's best management practices shall also be in accordance with the National Pollutant Discharge Elimination System (NPDES) Storm Water Pollution Prevention Plan (SWPPP) which may be reviewed at the Facility Environmental Office. Any temporary measures shall be removed after the area has been stabilized.

3.2.4 Contractor Facilities and Work Areas

The Contractor's field offices, staging areas, stockpile storage, and temporary buildings shall be placed in areas designated on the drawings or as directed by the Contracting Officer. Temporary movement or relocation of Contractor facilities shall be made only when approved. Erosion and sediment controls shall be provided for on-site borrow and spoil areas to prevent sediment from entering nearby waters. Temporary excavation and embankments for plant and/or work areas shall be controlled to protect adjacent areas.

3.3 WATER RESOURCES

The Contractor shall monitor construction activities to prevent pollution of surface and ground waters. Toxic or hazardous chemicals shall not be applied to soil or vegetation unless otherwise indicated. All water areas affected by construction activities shall be monitored by the Contractor. For construction activities immediately adjacent to impaired surface waters, the Contractor shall be capable of quantifying sediment or pollutant loading to that surface water when required by State or Federally issued Clean Water Act permits.

3.3.1 Wetlands

The Contractor shall not enter, disturb, destroy, or allow discharge of contaminants into any wetlands.

3.3.2 Storm Water Pollution Prevention Plan

For project sites greater than 1 acre in size (including all temporary access roads, trailer sites, storage areas, and any other disturbed area associated with the project), the Contractor shall develop a Storm Water Pollution Prevention Plan (SWPPP) and complete a Notice of Intent (NOI) for Storm Water Discharges as required for an NPDES General Permit administered by the Environmental Protection Agency (EPA). The Contractor's detailed SWPPP shall be developed within the guidelines of the basic SWPPP provided in Section 01421 BASIC STORM WATER POLLUTION PREVENTION PLAN. The Contractor shall submit the NOI to EPA not later than 48 hours prior to start of work. A dated copy of the Contractor's SWPPP and NOI shall be submitted to the Contracting Officer prior to commencement of construction activities. In addition, the Contractor shall post a copy of the Corps' NOI, the Contractor's NOI, and a brief project description on the project bulletin board. For the project description, the Contractor may use Section 1.1 of the SWPPP or write a brief description.

3.4 AIR RESOURCES

Equipment operation, activities, or processes performed by the Contractor shall be in accordance with all Federal and State air emission and performance laws and standards.

3.4.1 Particulates

Dust particles; aerosols and gaseous by-products from construction activities; and processing and preparation of materials, such as from asphaltic batch plants; shall be controlled at all times, including weekends, holidays and hours when work is not in progress. The Contractor shall maintain excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and other work areas within or outside the project boundaries free from particulates which would cause the Federal, State, and local air pollution standards to be exceeded or which would cause a hazard or a nuisance. Sprinkling, chemical treatment of an approved type, baghouse, scrubbers, electrostatic precipitators or other methods will be permitted to control particulates in the work area. Sprinkling, to be efficient, must be repeated to keep the disturbed area damp at all times. The Contractor must have sufficient, competent equipment available to accomplish these tasks. Particulate control shall be performed as the work proceeds and whenever a particulate nuisance or hazard occurs. The Contractor shall comply with all State and local visibility regulations.

3.4.1.1 Dust Control

See Section 01562 DUST CONTROL FOR FORT BLISS for additional requirements.

3.4.2 Odors

Odors from construction activities shall be controlled at all times. The odors shall not cause a health hazard and shall be in compliance with State regulations and/or local ordinances.

3.4.3 Sound Intrusions

The Contractor shall keep construction activities under surveillance and control to minimize environment damage by noise. The Contractor shall comply with the provisions of the State where he is working rules.

3.4.4 Burning

Burning shall be prohibited on the Government premises.

3.4.5 Air Emissions Reduction Plan

The Contractor, as owner/operator of the construction equipment at project sites in the Dallas-Fort Worth and Houston-Galveston areas (see 30 TAC 114.439 for applicable counties), shall comply with 30 TAC 114.432, 114.436, 114.437, and 114.439 on construction equipment operating restrictions when it becomes effective in 1 April, 2005. To be exempted from this ruling, the Contractor shall comply with 30 TAC 114.437 and prepare an Emission Reduction Plan by 31 May, 2002 for approval by executive director and the EPA by May 31, 2003. If the Contractor deviates from this ruling during construction, the Contractor shall provide a certification of proof to the Contracting Officer that the Emission Reduction Plan is approved by the regulatory agency and that the

construction equipment is exempted from the restricted operating hours per 30 TAC 114.432.

3.5 SOLID WASTE AND CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL

Disposal of wastes shall be as directed below, unless otherwise specified in other sections and/or shown on the drawings.

3.5.1 Solid Wastes

Solid wastes (excluding clearing debris) shall be placed in containers which are emptied on a regular schedule. Handling, storage, and disposal shall be conducted to prevent contamination. Segregation measures shall be employed so that no hazardous or toxic waste will become co-mingled with solid waste. Waste materials shall be hauled to the Government landfill site designated by the Contracting Officer. The Contractor shall comply with site procedures pertaining to the use of landfill areas.

3.5.2 Chemicals and Chemical Wastes

Chemicals shall be dispensed ensuring no spillage to the ground or water. Periodic inspections of dispensing areas to identify leakage and initiate corrective action shall be performed and documented. This documentation will be periodically reviewed by the Government. Chemical waste shall be collected in corrosion resistant, compatible containers. Collection drums shall be monitored and removed to a staging or storage area when contents are within 6 inches of the top. Wastes shall be classified, managed, stored, and disposed of in accordance with Federal, State, and local laws and regulations.

3.5.3 Contractor Generated Hazardous Wastes/Excess Hazardous Materials

Hazardous wastes are defined in 40 CFR 261, or are as defined by applicable State and local regulations. Hazardous materials are defined in 49 CFR 171 - 178. The Contractor shall, at a minimum, manage and store hazardous waste in compliance with 40 CFR 262 and shall manage and store hazardous waste in accordance with the Installation hazardous waste management plan. The Contractor shall take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing. The Contractor shall segregate hazardous waste from other materials and wastes, shall protect it from the weather by placing it in a safe covered location, and shall take precautionary measures such as berming or other appropriate measures against accidental spillage. The Contractor shall be responsible for storage, describing, packaging, labeling, marking, and placarding of hazardous waste and hazardous material in accordance with 49 CFR 171 - 178, State, and local laws and regulations. The Contractor shall transport Contractor generated hazardous waste off Government property within 60 days in accordance with the Environmental Protection Agency and the Department of Transportation laws and regulations. The Contractor shall dispose of hazardous waste in compliance with Federal, State and local laws and regulations. Spills of hazardous or toxic materials shall be immediately reported to the Contracting Officer and the Facility Environmental Office. Cleanup and cleanup costs due to spills shall be the Contractor's responsibility. The disposition of Contractor generated hazardous waste and excess hazardous materials are the Contractor's responsibility. The Contractor shall coordinate the disposition of hazardous waste with the Facility's Hazardous Waste Manager and the Contracting Officer.

3.5.4 Fuel and Lubricants

Storage, fueling and lubrication of equipment and motor vehicles shall be conducted in a manner that affords the maximum protection against spill and evaporation. Fuel, lubricants and oil shall be managed and stored in accordance with all Federal, State, Regional, and local laws and regulations. Used lubricants and used oil to be discarded shall be stored in marked corrosion-resistant containers and recycled or disposed in accordance with 40 CFR 279, State, and local laws and regulations. There shall be no storage of fuel on the project site. Fuel must be brought to the project site each day that work is performed.

3.5.5 Waste Water

Disposal of waste water shall be as specified below.

a. Waste water from construction activities, such as onsite material processing, concrete curing, foundation and concrete clean-up, water used in concrete trucks, forms, etc. shall not be allowed to enter water ways or to be discharged prior to being treated to remove pollutants. The Contractor shall dispose of the construction related waste water by collecting and placing it in a retention pond where suspended material can be settled out and/or the water can evaporate to separate pollutants from the water. The site for the retention pond shall be coordinated and approved with the Contracting Officer. The residue left in the pond prior to completion of the project shall be removed, tested, and disposed off-Government property in accordance with Federal, State, and local laws and regulations. The area shall be backfilled to the original grade, top-soiled and seeded/sodded.

b. For discharge of ground water, the Contractor shall surface discharge in accordance with the requirements of the NPDES or State STORM WATER DISCHARGES FROM CONSTRUCTION SITES permit.

c. Water generated from the flushing of lines after disinfection or disinfection in conjunction with hydrostatic testing or hydrostatic testing shall be land applied in accordance with all Federal, State, and local laws and regulations for land application .

3.6 RECYCLING AND WASTE MINIMIZATION

The Contractor shall participate in State and local government sponsored recycling programs. The Contractor is further encouraged to minimize solid waste generation throughout the duration of the project. The Contractor shall participate in the following recycling and waste minimization activities to divert non-hazardous solid waste: Ferrous material recycling dropoff within Fort Bliss.

3.7 NON-HAZARDOUS SOLID WASTE DIVERSION REPORT

The Contractor shall maintain an inventory of non-hazardous solid waste diversion and disposal of construction and demolition debris. The Contractor shall submit a report to the Contracting Officer on the first working day after each fiscal year quarter, starting the first quarter that non-hazardous solid waste has been generated. The following shall be included in the report:

a. Construction and Demolition (C&D) Debris Disposed = in cubic

yards or tons, as appropriate.

b. Construction and Demolition (C&D) Debris Recycled = in cubic yards or tons, as appropriate.

c. Total C&D Debris Generated = in cubic yards or tons, as appropriate.

d. Waste Sent to Waste-To-Energy Incineration Plant (This amount should not be included in the recycled amount) = in cubic yards or tons, as appropriate.

3.8 HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

Existing historical, archaeological, and cultural resources within the Contractor's work area are shown on the drawings. The Contractor shall protect these resources and shall be responsible for their preservation during the life of the Contract. If during excavation or other construction activities any previously unidentified or unanticipated historical, archaeological, and cultural resources are discovered or found, all activities that may damage or alter such resources shall be temporarily suspended. Resources covered by this paragraph include but are not limited to: any human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, or other deposits; rock or coral alignments, pavings, wall, or other constructed features; and any indication of agricultural or other human activities. Upon such discovery or find, the Contractor shall immediately notify the Contracting Officer so that the appropriate authorities may be notified and a determination made as to their significance and what, if any, special disposition of the finds should be made. The Contractor shall cease all activities that may result in impact to or the destruction of these resources. The Contractor shall secure the area and prevent employees or other persons from trespassing on, removing, or otherwise disturbing such resources.

3.9 BIOLOGICAL RESOURCES

The Contractor shall minimize interference with, disturbance to, and damage to fish, wildlife, and plants including their habitat. The Contractor shall be responsible for the protection of threatened and endangered animal and plant species including their habitat in accordance with Federal, State, Regional, and local laws and regulations.

3.10 INTEGRATED PEST MANAGEMENT

In order to minimize impacts to existing fauna and flora, the Contractor, through the Contracting Officer, shall coordinate with the at the earliest possible time prior to pesticide application. The Contractor shall discuss integrated pest management strategies with the IPMC and receive concurrence from the IPMC through the COR prior to the application of any pesticide associated with these specifications. Pest Management personnel shall be given the opportunity to be present at all meetings concerning treatment measures for pest or disease control and during application of the pesticide. The use and management of pesticides are regulated under 40 CFR 152 - 186.

3.10.1 Pesticide Delivery and Storage

Pesticides shall be delivered to the site in the original, unopened containers bearing legible labels indicating the EPA registration number

and the manufacturer's registered uses. Pesticides shall be stored according to manufacturer's instructions and under lock and key when unattended.

3.10.2 Qualifications

For the application of pesticides, the Contractor shall use the services of a subcontractor whose principal business is pest control. The subcontractor shall be licensed and certified in the state where the work is to be performed.

3.10.3 Pesticide Handling Requirements

The Contractor shall formulate, treat with, and dispose of pesticides and associated containers in accordance with label directions and shall use the clothing and personal protective equipment specified on the labeling for use during all phases of the application. Material Safety Data Sheets (MSDS)shall be available for all pesticide products.

3.10.4 Application

Pesticides shall be applied by a State Certified Pesticide Applicator in accordance with EPA label restrictions and recommendation. The Certified Applicator shall wear clothing and personal protective equipment as specified on the pesticide label. Water used for formulating shall only come from locations designated by the Contracting Officer. The Contractor shall not allow the equipment to overflow. Prior to application of pesticide, all equipment shall be inspected for leaks, clogging, wear, or damage and shall be repaired prior to being used.

3.11 PREVIOUSLY USED EQUIPMENT

The Contractor shall clean all previously used construction equipment prior to bringing it onto the project site. The Contractor shall ensure that the equipment is free from soil residuals, egg deposits from plant pests, noxious weeds, and plant seeds. The Contractor shall consult with the USDA jurisdictional office for additional cleaning requirements.

3.12 MAINTENANCE OF POLLUTION FACILITIES

The Contractor shall maintain permanent and temporary pollution control facilities and devices for the duration of the contract or for that length of time construction activities create the particular pollutant.

3.12.1 Storm Water Pollution Prevention Plan

For construction sites covered by a General Construction Permit for Storm Water Discharges, the Contractor's quality control organization shall inspect pollution control structures and activities a minimum of once every seven calendar days and within 24 hours after any storm event of greater than 13 mm (1/2 inch) until final stabilization is achieved. A sample Inspection and Maintenance Report form is included in Section 01421 BASIC STORM WATER POLLUTION PREVENTION PLAN. An inspection report for each inspection shall be retained on site by the Contractor. In addition, the Contractor shall furnish a copy of each report to the Contracting Officer. When the inspection reveals inadequacies, the pollution prevention measures in the Contractor's Pollution Prevention Plan must be revised and changes implemented within seven days after the inspection. After final stabilization has been achieved, the Contractor shall inspect the site once

a month until final inspection and project acceptance by the Corps. After project acceptance, the Contractor shall halt all inspections and shall independently submit a Notice of Termination (NOT) to EPA for the general construction.

3.13 MILITARY MUNITIONS

In the event the Contractor discovers or uncovers military munitions as defined in 40 CFR 260, the Contractor shall immediately stop work in that area and immediately inform the Contracting Officer.

3.14 TRAINING OF CONTRACTOR PERSONNEL

The Contractor's personnel shall be trained in all phases of environmental protection and pollution control. The Contractor shall conduct environmental protection/pollution control meetings for all Contractor personnel prior to commencing construction activities. Additional meetings shall be conducted for new personnel and when site conditions change. The training and meeting agenda shall include: methods of detecting and avoiding pollution; familiarization with statutory and contractual pollution standards; installation and care of devices, vegetative covers, and instruments required for monitoring purposes to ensure adequate and continuous environmental protection/pollution control; anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants; recognition and protection of archaeological sites, artifacts, wetlands, and endangered species and their habitat that are known to be in the area.

3.15 CONTAMINATED MEDIA MANAGEMENT

Cleanup of contaminated environmental media consisting of, but not limited to, ground water, soils, and sediments shall be the responsibility of the Contractor.

3.16 POST CONSTRUCTION CLEANUP

The Contractor shall clean up all areas used for construction in accordance with Contract Clause: "Cleaning Up". The Contractor shall, unless otherwise instructed in writing by the Contracting Officer, obliterate all signs of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work. The disturbed area shall be graded, filled and the entire area seeded unless otherwise indicated.

3.17 HAZARDOUS SUBSTANCE REPORTING

The Contractor shall comply with the requirements of Sections 301 through 312 of the Emergency Planning and Community Right-to-Know Act (EPCRA), also known as Superfund Amendments and Reauthorization Act (SARA) Title III, as published in 40 CFR Part 355. The Contractor shall also comply with all state regulations and procedures which result from EPCRA and the hazard communication program requirements of COE EM 385-1-1. The following planning and reporting requirements involve the Contractor's reporting requirements but are not all inclusive; i.e. transport regulations are not addressed. It is the Contractor's responsibility to comply with all Federal, state, and local emergency planning and reporting requirements.

3.17.1 Definitions and Acronyms

3.17.1.1 CERCLA Hazardous Substance (CHS)

A CERCLA Hazardous Substance (CHS) is any substance listed in Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act, also referred to as Superfund; the list of substances also appears in Table 302.4 of 40 CFR 302.

3.17.1.2 Contracting Officer (CO)

For purposes of the Emergency Planning and Community Right-to-Know Act (EPCRA), the Contracting Officer (CO) will be considered the site owner or operator's construction representative.

3.17.1.3 Extremely Hazardous Substance (EHS)

An Extremely Hazardous Substance (EHS) is any substance listed in Appendices A and B of 40 CFR 355.

3.17.1.4 Facility Emergency Coordinator (FEC)

Facility Emergency Coordinator (FEC) is the representative of the facility Owner or Operator. The Contractor shall identify the FEC and notify the FEC as described below each time the Contractor brings a hazardous substance onto the construction site.

3.17.1.5 Hazardous Chemical Substance (HCS)

A Hazardous Chemical Substance (HCS) is any substance defined as hazardous under 29 CFR 1910.1200, with exceptions as listed in 40 CFR 370.2; generally any substance with a Material Safety Data Sheet (MSDS).

3.17.1.6 Reportable Quantity (RQ)

Reportable Quantity (RQ) is a specified minimum amount of a CHS or an EHS which, if released, must be reported immediately to the FEC. The RQ for a CHS is listed in Table 302.4 of 40 CFR 302; the RQ for an EHS is 0.45 kg (1 pound).

3.17.1.7 Threshold Planning Quantity (TPQ)

Threshold Planning Quantity (TPQ) is a specified minimum amount of an EHS which, if brought onto the construction site, must be reported within a stated time to the FEC. The TPQ for an EHS is listed in Appendices A and B of 40 CFR 355 or is the quantity published in state code, whichever is less.

3.17.1.8 Threshold Quantity (TQ)

Threshold Quantity (TQ) is the quantity listed as the Threshold Inventory Quantity for hazardous substances in Title 33 of the Louisiana Administrative Code, Part V, Subpart 2, Chapter 101.

3.17.2 Hazardous Substance Reporting

Whenever a HCS or an EHS substance is brought onto the construction site, the Contractor shall submit the attached reporting form to the FEC, the fire department with jurisdiction over the site, and the Contracting Officer as described below:

a. within 5 days for an EHS substance which (1) equals or exceeds

its TPQ, or (2) is a solid or liquid weighing 225 kg (500 pounds) or more, whichever is less, or

b. within 10 days for a HCS substance which equals or exceeds 500 pounds or the state level, whichever is less.

3.17.3 Emergency Release Notification for Listed Hazardous Substances

The Contractor shall immediately notify the FEC and the Contracting Officer if there is a release of an EHS or a CHS substance whose quantity equals or exceeds its RQ.

Notification is also required if the following substances are released into the environment:

a. 5,000 pounds or more of any dry solid substance which is an HCS but not an EHS or a CHS,

b. 100 pounds or more of compressed inflammable gas or an inflammable liquid which is an HCS, or

c. 500 pounds or more of any other liquid which is an HCS but not an EHS or CHS.

3.17.3.1 Emergency Notification Information

Emergency notifications shall consist of the following information:

a. The Contractor's name, the name and telephone number of the person making the report, and the name and telephone number of the Contractor's contact person;

b. The chemical name and identification;

c. An estimate of the quantity released;

d. The location of the release;

e. The time and duration of the release;

f. The medium receiving the release (air, land, water);

g. Known acute or chronic health risks;

h. Medical advice when necessary; and

i. Recommended community precautions.

3.17.3.2 Follow-Up Notice

Within 5 days of the release, a written follow-up notice of the release shall be provided to the FEC and the Contracting Officer. The written notice shall update information provided in the initial report, provide detailed information on the response actions taken, and provide advice regarding medical attention necessary for exposed individuals.

3.17.3.3 State EPCRA Agency

The Contractor may call the following governing agency for information

about EPCRA requirements:

Texas Department of Health
Hazard Communication Branch
West 49th Street
Austin, Texas 78756
Telephone Numbers: 1-800-452-2791 (inside Texas)
512-834-6603 (outside Texas)

New Mexico Department of Public Safety
New Mexico Emergency Response Commission
P.O. Box 1628
Santa Fe, New Mexico 87504-1628
Telephone Number 505-827-9923

3.18 FORMS

The EMERGENCY PLANNING COMMUNITY RIGHT TO KNOW NOTIFICATION form is attached to the end of this Section.

-- End of Section --

State of _____

EMERGENCY PLANNING COMMUNITY RIGHT TO KNOW NOTIFICATION FORM

Date _____

This is a notification that the facility named below stores or has stored a Hazardous Chemical Substance (HCS) or an Extremely Hazardous Substance (EHS) as listed in Section 302(c), Title III of SARA - Emergency Planning and Community Right-to-Know Act of 1986.

INSTRUCTIONS: Print or type all information, except signature.

_____
Name of Construction Facility

_____
Address

_____
City State Zip Code

_____
Name and Company of Person Completing Form

_____
Storage Location of HS/EHS

_____
Facility Emergency Coordinator

_____
Telephone Number

_____
Signature of Person Completing Form

CHEMICAL DESCRIPTION

_____
Product Name

_____
Chemical Name(s)

_____
CAS Number(s)

_____
Maximum Quantity On-Site

_____
Average Daily Quantity On Site

FOR EHS or CHS

_____
Threshold Planning Quantity

_____
Reportable Quantity

CHEMICAL CHARACTERISTICS

Description	Hazard
[ ] Pure	[ ] Fire
[ ] Mixture	[ ] Pressure
[ ] Solid	[ ] Reactivity
[ ] Liquid	[ ] Acute
[ ] Gas	[ ] Chronic

TYPE OF HAZARDOUS SUBSTANCE

[ ] EHS [ ] CHS

SECTION 02220

DEMOLITION
05/02
AMENDMENT NO. 0002, 0003 & 0005

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI A10.6	(1990; R 1998) Safety Requirements for Demolition Operations

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(1996) U.S. Army Corps of Engineers Safety and Health Requirements Manual

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 61-SUBPART M	National Emission Standard for Asbestos

1.2 GENERAL REQUIREMENTS

Do not begin demolition until authorization is received from the Contracting Officer. Remove rubbish and debris from the project site; do not allow accumulations inside or outside the reservoirs or inside or outside the buildings . The work includes demolition, salvage of identified items and materials, and removal of resulting rubbish and debris. Rubbish and debris shall be removed from Government property daily, unless otherwise directed, to avoid accumulation at the demolition site. Materials that cannot be removed daily shall be stored in areas specified by the Contracting Officer. In the interest of occupational safety and health, the work shall be performed in accordance with EM 385-1-1, Section 23, Demolition, and other applicable Sections.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Notification to TDH; G

Notification of building demolition activity, signed by the Installation representative, shall be provided to the Texas Department of Health (TDH) no later than 10 days before demolition

of any structure. The Contractor shall submit a receipt of proof of notification to the Contracting Officer.

SD-03 Product Data

Work Plan;

The procedures proposed for the accomplishment of the work. The procedures shall provide for safe conduct of the work, including procedures and methods to provide necessary supports, lateral bracing and shoring when required, careful removal and disposition of materials specified to be salvaged, protection of property which is to remain undisturbed, coordination with other work in progress, and timely disconnection of utility services. The procedures shall include a detailed description of the methods and equipment to be used for each operation, and the sequence of operations in accordance with EM 385-1-1.

SD-07 Certificates

Demolition plan; G

Notifications; G

Notification of Demolition and Renovation forms; G

Submit proposed salvage, demolition and removal procedures to the Contracting Officer for approval before work is started.

SD-11 Closeout Submittals

Receipts

1.4 REGULATORY AND SAFETY REQUIREMENTS

Comply with federal, state, and local hauling and disposal regulations. In addition to the requirements of the "Contract Clauses," safety requirements shall conform with ANSI A10.6.

1.4.1 Notifications

Furnish timely notification of demolition projects to Federal, State, regional, and local authorities in accordance with 40 CFR 61-SUBPART M. Notify the Contracting Officer in writing 10 working days prior to the commencement of work in accordance with 40 CFR 61-SUBPART M.

Complete and submit Notification of Demolition and Renovation forms to Federal and State authorities and Contracting Officer, including Notification to TDH, postmarked or delievered at least ten working days prior to commencement of work, in accordance with 40 CFR 61-SUBPART M.

1.5 DUST AND DEBRIS CONTROL

Prevent the spread of dust and debris to occupied portions of the structure or adjacent buildings and avoid the creation of a nuisance or hazard in the surrounding area. Do not use water if it results in hazardous or objectionable conditions such as, but not limited to, ice, flooding, or pollution.

1.6 PROTECTION

1.6.1 Traffic Control Signs

Where pedestrian and driver safety is endangered in the area of removal work, use traffic barricades with flashing lights. Notify the Contracting Officer prior to beginning such work.

1.6.2 Existing Work

Before beginning any demolition work, the Contractor shall survey the site and examine the drawings and specifications to determine the extent of the work. The Contractor shall take necessary precautions to avoid damage to existing items to remain in place, to be reused, or to remain the property of the Government; any damaged items shall be repaired or replaced as approved by the Contracting Officer. The Contractor shall coordinate the work of this section with all other work and shall construct and maintain shoring, bracing, and supports as required. The Contractor shall ensure that structural elements are not overloaded and shall be responsible for increasing structural supports or adding new supports as may be required as a result of any cutting, removal, or demolition work performed under this contract. Do not overload structural elements. Provide new supports and reinforcement for existing construction weakened by demolition or removal work. Repairs, reinforcement, or structural replacement must have Contracting Officer approval.

1.6.3 Trees

Trees within the project site which might be damaged during demolition, and which are indicated to be left in place, shall be protected by a 6 foot high fence. The fence shall be securely erected a minimum of 5 feet from the trunk of individual trees or follow the outer perimeter of branches or clumps of trees. Any tree designated to remain that is damaged during the work under this contract shall be replaced in kind or as approved by the Contracting Officer.

1.6.4 Facilities

Protect electrical and mechanical services and utilities. Where removal of existing utilities and pavement is specified or indicated, provide approved barricades, temporary covering of exposed areas, and temporary services or connections for electrical and mechanical utilities. Floors, roofs, walls, columns, pilasters, and other structural components that are designed and constructed to stand without lateral support or shoring, and are determined to be in stable condition, shall remain standing without additional bracing, shoring, of lateral support until demolished, unless directed otherwise by the Contracting Officer. The Contractor shall ensure that no elements determined to be unstable are left unsupported and shall be responsible for placing and securing bracing, shoring, or lateral supports as may be required as a result of any cutting, removal, or demolition work performed under this contract.

1.6.5 Protection of Personnel

During the demolition work the Contractor shall continuously evaluate the condition of the structure being demolished and take immediate action to protect all personnel working in and around the demolition site. No area, section, or component of floors, roofs, walls, columns, pilasters, or other structural element will be allowed to be left standing without sufficient

bracing, shoring, or lateral support to prevent collapse or failure while workmen remove debris or perform other work in the immediate area.

1.7 BURNING

The use of burning at the project site for the disposal of refuse and debris will not be permitted .

1.8 RELOCATIONS

Perform the removal and reinstallation of relocated items as indicated with workmen skilled in the trades involved. Repair items to be relocated which are damaged or replace damaged items with new undamaged items as approved by the Contracting Officer.

1.9 Required Data

Demolition plan shall include procedures for careful removal and disposition of materials specified to be salvaged, coordination with other work in progress, a disconnection schedule of utility services, and a detailed description of methods and equipment to be used for each operation and of the sequence of operations.

1.10 Environmental Protection

The work shall comply with the requirements of Section 01355 ENVIRONMENTAL PROTECTION .

1.11 USE OF EXPLOSIVES

Use of explosives will not be permitted.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 EXISTING FACILITIES TO BE REMOVED

3.1.1 Structures

The existing reservoir walls at Buildings 11172, 11173, and 4317 shall be removed **[AM#3] to 2 feet below grade unless shown otherwise on the Drawings.**. The existing reservoir at building 1318 shall be removed completely.

3.1.2 Utilities and Related Equipment

Remove existing utilities , as indicated and terminate in a manner conforming to the nationally recognized code covering the specific utility and approved by the Contracting Officer. **[AM#5] All water lines that are replaced with new water lines shall be removed and disposed of appropriately. [AM#2] When removing asbestos cement pipe, conform to requirements of Section 13280 ASBESTOS ABATEMENT. [AM#5] Transport properly contained AC pipe to the Ft. Bliss landfill as indicated on the drawings.** When utility lines are encountered that are not indicated on the drawings, the Contracting Officer shall be notified prior to further work in that area. Remove meters and related equipment and deliver to a

location on the **[AM#2]** **Main Ft. Bliss cantonment** in accordance with instructions of the Contracting Officer. If utility lines are encountered that are not shown on drawings, contact the Contracting Officer for further instructions.

3.1.3 Paving and Slabs

Remove sawcut concrete and asphaltic concrete paving and slabs where required. Provide neat sawcuts at limits of pavement removal as indicated.

3.1.4 Concrete

Saw concrete along straight lines to a depth of not less than 2 inches. Make each cut in walls perpendicular to the face and in alignment with the cut in the opposite face. Break out the remainder of the concrete provided that the broken area is concealed in the finished work, and the remaining concrete is sound. At locations where the broken face cannot be concealed, grind smooth or saw cut entirely through the concrete. **[AM#2]** **See Section 02221 PAVEMENT REMOVAL.**

3.1.5 Patching

Where removals leave holes and damaged surfaces exposed in the finished work, patch and repair these holes and damaged surfaces to match adjacent finished surfaces. Where new work is to be applied to existing surfaces, perform removals and patching in a manner to produce surfaces suitable for receiving new work. Finished surfaces of patched area shall be flush with the adjacent existing surface and shall match the existing adjacent surface as closely as possible as to texture and finish. Patching shall be as specified and indicated, and shall include:

a. Holes and depressions left as a result of removals in existing concrete walls to remain shall be completely filled with an approved concrete patching material, applied in accordance with the manufacturer's printed instructions.

3.2 DISPOSITION OF MATERIAL

3.2.1 Title to Materials

Except where specified in other sections, all materials and equipment removed, and not reused, shall become the property of the Contractor and shall be removed from Government property. Title to materials resulting from demolition, and materials and equipment to be removed, is vested in the Contractor upon approval by the Contracting Officer of the Contractor's demolition and removal procedures, and authorization by the Contracting Officer to begin demolition. The Government will not be responsible for the condition or loss of, or damage to, such property after contract award. Materials and equipment shall not be viewed by prospective purchasers or sold on the site.

3.2.2 Salvaged Materials and Equipment

Remove materials and equipment that are indicated on drawings to be removed by the Contractor and that are to remain the property of the Government.

Contractor shall salvage items and material to the maximum extent possible.

Material salvaged for the Contractor shall be stored as approved by the

Contracting Officer and shall be removed from Government property before completion of the contract. Material salvaged for the Contractor shall not be sold on the site.

Salvaged items to remain the property of the Government shall be removed in a manner to prevent damage, and packed or crated to protect the items from damage while in storage. Items damaged during removal or storage shall be repaired or replaced to match existing items. Containers shall be properly identified as to contents. **[AM#2] Transport salvaged items to the contractor's designated laydown yard.**

[AM#2] Items to remain the property of the government are:

1. Pumps.
2. Meters and meter boxes.

3.2.3 Ferrous Material Recycling

All ferrous materials shall be salvaged for recycing. Ferrous materials may be **[AM#2]** _____ taken to a privately owned recycle center. Demolished fire hydrants cannot be reused because of the probability of lead paint coatings. To avoid friable lead abatement, the Contractor must not pull lead joints loose during demolition of cast iron pipe. Pipe and fittings containing lead joints and fire hydrants shall be stored in enclosed watertight containers until delivered to an approved recycle center.

3.2.4 Unsalvageable Material

Concrete, masonry, and other noncombustible material, except concrete permitted to remain in place, shall be disposed of **[AM#2] off government controlled property**. **[AM#2]** _____ Combustible material shall be disposed of off the site.

3.3 CLEANUP

Debris and rubbish shall be removed from base slab and similar excavations. Debris shall be removed and transported in a manner that prevents spillage on streets or adjacent areas. Local regulations regarding hauling and disposal shall apply.

3.3.1 **[AM#2] DELETED**

-- End of Section --

SECTION 09965A

PAINTING: HYDRAULIC STRUCTURES
12/02
AMENDMENT NO. 0005

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z358.1	(1998) Emergency Eyewash and Shower Equipment
ANSI Z87.1	(1989; R 1998) Practice for Occupational and Educational Eye and Face Protection

ASTM INTERNATIONAL (ASTM)

ASTM D 1045	(1995; R 2001) Sampling and Testing Plasticizers Used in Plastics
ASTM D 1152	(1997; R 2001) Methanol (Methyl Alcohol)
ASTM D 1153	(1994; R 2001) Methyl Isobutyl Ketone
ASTM D 1186	(2001) Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to a Ferrous Base
ASTM D 12	(1988; R 1998) Raw Tung Oil
ASTM D 1200	(1994; R 1999) Viscosity by Ford Viscosity Cup
ASTM D 1210	(1996) Fineness of Dispersion of Pigment-Vehicle Systems by Hegman-Type Gage
ASTM D 1308	(2002) Effect of Household Chemicals on Clear and Pigmented Organic Finishes
ASTM D 1400	(2000) Nondestructive Measurement of Dry Film Thickness of Nonconductive Coatings Applied to a Nonferrous Metal Base
ASTM D 1475	(1998) Density of Liquid Coatings, Inks, and Related Products
ASTM D 153	(1984; R 1996e1) Specific Gravity of Pigments

ASTM D 1640	(1995; R 1999) Drying, Curing, or Film Formation of Organic Coatings at Room Temperature
ASTM D 235	(2002) Mineral Spirits (Petroleum Spirits) (Hydrocarbon Dry Cleaning Solvent)
ASTM D 2369	(2001e1) Volatile Content of Coatings
ASTM D 281	(1995; R 2002) Oil Absorption of Pigments by Spatula Rub-Out
ASTM D 2917	(2002) Methyl Isoamyl Ketone
ASTM D 304	(1995; R 1999) n-Butyl Alcohol (Butanol)
ASTM D 3721	(1983; R 1999) Synthetic Red Iron Oxide Pigment
ASTM D 4206	(1996; R 2001) Sustained Burning of Liquid Mixtures Using the Small Scale Open-Cup Apparatus
ASTM D 4417	(1993; R 1999) Field Measurement of Surface Profile of Blast Cleaned Steel
ASTM D 520	(2000) Zinc Dust Pigment
ASTM D 561	(1982; R 1996e1) Carbon Black Pigment for Paint
ASTM D 740	(1994; R 2001) Methyl Ethyl Ketone
ASTM D 841	(2002) Nitration Grade Toluene
ASTM D 962	(1981; R 1999) Aluminum Powder and Paste Pigments for Paints
ASTM E 1347	(1997) Color and Color Difference Measurement by Tristimulus (Filter) Colorimetry

MASTER PAINTERS INSTITUTE (MPI)

MPI 46	(Jan 2003) Interior Enamel, Undercoat
MPI 50	(Jan 2003) Interior Latex Primer Sealer

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2002) National Electrical Code

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)

NIOSH 98-119	(1998; 4th Ed) Supplement 2 to NIOSH Manual of Analytical Methods

THE SOCIETY FOR PROTECTIVE COATINGS (SSPC)

SSPC Guide 6	(1995) Guide for Containing Debris Generated During Paint Removal Operations
SSPC PS 26.00	(2000) Aluminum-Pigmented Epoxy Coating System Materials Specification for Performance-Based, Type I for use over Blast Cleaned Steel, Type II for use over Hand Cleaned Steel
SSPC Paint 16	(1982; R 2000) Coal Tar Epoxy-Polyamide Black (or Dark Red) Paint
SSPC Paint 20	(2002) Zinc-Rich Coating, (Type I - "Inorganic" and Type II - "Organic")
SSPC Paint 25	(1997; R 2000) Zinc Oxide, Aklyd, Linseed Oil Primer for Use Over Hand Cleaned Steel, Type I and Type II
SSPC Paint 27	(1982; R 2000) Basic Zinc Chromate-Vinyl Butyral Wash Primer
SSPC QP 1	(1998; R 2000) Standard Procedure for Evaluating Painting Contractors (Field Application to Complex Industrial Structures)
SSPC QP 2	(2000) Standard Procedure for the Qualification of Painting Contractors (Field Removal of Hazardous Coatings from Complex Structures)
SSPC SP 1	(1982; R 2000) Solvent Cleaning
SSPC SP 5	(2000) White Metal Blast Cleaning
SSPC SP 6	(2000) Commercial Blast Cleaning

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(1996) U.S. Army Corps of Engineers Safety and Health Requirements Manual

U.S. DEPARTMENT OF DEFENSE (DOD)

MIL-DTL-24441C SUP 1	(Rev. C; Supp. 1) Paint, Epoxy-Polyamide

U.S. GENERAL SERVICES ADMINISTRATION (GSA)

CID A-A-3132	(Basic) Coating System: Epoxy Primer/Urethane Topcoat for Minimally Prepared Atmospheric Steel
FED-STD-595B(1)	(Rev B) Colors Used In Government Procurement

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1910, Subpart I	Personal Protective Equipment
29 CFR 1910.134	Respiratory Protection
29 CFR 1910.146	Permit-required Confined Spaces
29 CFR 1910.20	Access to Employee Exposure and Medical Records
29 CFR 1910.94	Ventilation
29 CFR 1926	Safety and Health Regulations for Construction
29 CFR 1926.62	Lead
40 CFR 117	Determination of Reportable Quantities for Hazardous Substances
40 CFR 122	EPA Administered Permit Programs: The National Pollutant Discharge Elimination System
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 261, App II, Mtd 1311	Toxicity Characteristic Leaching Procedure (TCLP)
40 CFR 261, App III	Chemical Analysis Test Methods
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 262.22	Number of Copies
40 CFR 263	Standards Applicable to Transporters of Hazardous Waste
40 CFR 302	Designation, Reportable Quantities, and Notification
40 CFR 355	Emergency Planning and Notification
40 CFR 50, App B	Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere (High Volume Method)
40 CFR 50.12	National Primary and Secondary Ambient Air Quality Standards for Lead
40 CFR 50.6	National Primary and Secondary Ambient Air Quality Standards for Particulate Matter

40 CFR 58, App E	Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring
40 CFR 60, App A, Mtd 22	Visual Determination of Fugitive Emissions from Material Sources and Smoke Emissions from Flares
49 CFR 171, Subchapter C	Hazardous Materials Regulations

1.2 **[AM#5] DELETED**

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Safety and Health Provisions; G

The Contractor shall submit an Accident Prevention Plan in accordance with the requirements of Section 01 of EM 385-1-1. The plan shall include, but is not limited to, each of the topic areas listed in Appendix A therein and the requirements of paragraph SAFETY AND HEALTH PROVISIONS; each topic shall be developed in a concise manner to include management and operational aspects.

Confined Spaces; G

The Contractor shall submit detailed written standard operating procedures for confined spaces in accordance with 29 CFR 1910.146 and EM 385-1-1, Section 6I, and as further described in this paragraph.

a. The procedures shall include certificates of calibration for all testing and monitoring equipment. The certificates of calibration shall include: type of equipment, model number, date of calibration, firm conducting calibration, and signature of individual certifying calibration.

b. The procedures shall include methods of inspection of personal protective equipment prior to use.

c. The procedures shall include work practices and other engineering controls designed to reduce airborne hazardous chemical exposures to a minimum.

d. The procedures shall include specification of the design and installation of ventilation systems which shall provide adequate oxygen content and provide for the dilution of paint solvent vapor, lead, and other toxic particulates within the confined space. In addition, the contractor shall include plans to evaluate the adequacy of air flow patterns.

Respirators; G

The Contractor shall submit a comprehensive written respiratory protection program in accordance with 29 CFR 1910.134, 29 CFR 1926.62, and Section 05.E of EM 385-1-1.

Certified Laboratory; G

The contractor shall submit an Airborne Sampling Plan detailing the NIOSH 98-119, Factory Mutual, or Underwriters Laboratories approved equipment, equipment calibration procedures, sampling methods, sampling to be performed, and analytical procedures to be used based on the type of work to be performed and anticipated toxic contaminants to be generated. The contractor shall include the name of the accredited laboratory, listed by the American Industrial Hygiene Association (AIHA), to be used to conduct the analysis of any collected air samples.

Ventilation; G

The contractor shall submit a plan to provide ventilation assessment as required by paragraph PAINT APPLICATION, subparagraph VENTILATION.

Medical Status; G

The Contractor shall submit a Medical Surveillance Plan as required in paragraph MEDICAL STATUS and provide a statement from the examining physician indicating the name of each employee evaluated and any limitations which will preclude the employee from performing the work required. The statement shall include the date of the medical evaluation, the physician's name, signature, and telephone number.

Lead-Based Paint Removal; G

The Contractor shall submit a Worker Protection Plan in accordance with the requirements of 29 CFR 1926.62. The plan shall address all necessary aspects of worker protection and shall include activities emitting lead, means to achieve compliance, alternative technologies considered, air monitoring program, implementation schedule, work practice program, administrative controls, multicontractor site arrangements, and jobsite inspections.

Environmental Protection; G

The Contractor shall submit an Environmental Compliance Plan. The plan shall incorporate the submittals for Water Quality Plan, Soil Quality Plan, Ambient Air Monitoring Plan, and Visible Emissions Monitoring Plan. The submitted plan shall also address all aspects of establishing and demarcating regulated areas, ventilation/containment system performance verification, and reporting of accidental releases.

Waste Classification, Handling, and Disposal; G

The contractor shall submit a Waste Classification, Handling, and Disposal Plan in accordance with the requirements of 40 CFR 261 and 40 CFR 262 and paragraph Waste Classification, Handling, and Disposal.

Containment; G

The Contractor shall submit a plan for containing debris generated during paint removal operations in accordance with the requirements of paragraph Containment. The plan shall include drawings, load-bearing capacity calculations, and wind load calculations. When the design is such that the spent abrasive is allowed to accumulate in quantities greater than 1,000 pounds, and/or impart a significant wind load on the structure, the contractor shall have the drawings approved by a registered structural engineer. The drawings and calculations shall be stamped with the engineer's seal. The contractor shall also identify the type and placement of water booms, methods for anchoring the booms, and the procedures for removing debris.

Visible Emissions Monitoring; G

The Contractor shall submit a Visible Emissions Monitoring Plan in accordance with the paragraph Visible Emissions Monitoring. The plan shall include the provisions for halting work and correcting the containment in the event unacceptable emissions are observed. General statements shall not be used; specific methods, procedures, and details are required.

PM-10 Monitoring; G

The Contractor shall submit a plan for monitoring emissions of particulate matter 10 microns or less in size (PM-10). The plan shall comply with the requirements of EPA regulation 40 CFR 50.6 and paragraph PM-10 Monitoring. The plan shall also include provisions for halting work and correcting the containment in the event unacceptable emissions occur. The Contractor shall submit a plan for monitoring emissions of Total Suspended Particulates (TSP). The plan shall comply with the requirements of EPA regulation 40 CFR 50.12 and paragraph TSP Monitoring. The plan shall also include provisions for halting work and correcting the containment in the event unacceptable emissions occur.

Water Quality; G

For all job sites where lead-containing or other hazardous paint will be removed, the Contractor shall submit a Water Quality Plan. The plan shall include provisions for halting work if spills or emissions are observed entering into bodies of water or found in areas where storm water runoff could carry the debris into bodies of water or storm sewers. The plan shall also address cleanup and reporting procedures.

Soil Quality; G

For all job sites where lead-containing or other hazardous paint will be removed, the Contractor shall submit a Soil Quality Plan. The plan shall include provisions for halting the work should soil contamination occur, correcting the deficiencies responsible for the contamination, and provide procedures for removing and replacing contaminated soil.

SD-04 Samples

Special Paint Formulas; G
Paint Formulations; G

The Contractor shall submit samples of all special paint formula, Military, Master Painter Institute, Commercial Item Description, and SSPC paints. For products that are specified to be applied in accordance with the manufacturer's recommendations the Contractor shall also submit the paint producers product data sheet or other written instructions for those products.

Solvent and Thinners; G

Samples shall be submitted of the thinners which are those solvents used to reduce the viscosity of the paint.

SD-06 Test Reports

PM-10 Monitoring; G

The Contractor shall submit reports of the PM-10 monitoring tests as described in paragraph PM-10 Monitoring.

TSP Monitoring; G

The Contractor shall submit reports of the TSP monitoring tests as described in paragraph TSP Monitoring.

Certified Laboratory; G

The Contractor shall submit reports of airborne sampling tests.

Soil Quality; G

The Contractor shall submit the results of the prework and post work soil quality tests in accordance with the requirements of paragraph Soil Quality.

Inspection; G

The Contractor shall submit records of inspections and operations performed in accordance with paragraph INSPECTION. Submittals shall be made on a daily basis.

SD-07 Certificates

Qualifications; G

The Contractor shall submit certification pursuant to paragraph QUALIFICATIONS for all job sites. Submittal of the qualifications and experience of any additional qualified and competent persons employed to provide on-site environmental, safety, and health shall also be provided. Acceptance of this submission must be obtained prior to the submission of other required environmental, safety, and health submittal items.

Qualified Painting Contractor; G

The Contractor shall submit a copy of their current SSPC QP 1 certification.

<TAI OPT=QP-2 HAZARDOUS PAINT REMOVAL CONTRACTOR>Qualified Hazardous Paint Removal Contractor; G

The Contractor shall submit a copy of their current SSPC QP 2 certification.

Coating Thickness Gage Qualification; G

Documentation of manufacturer's certification shall be submitted for all coating thickness gages.

1.4 QUALIFICATIONS

Qualifications and experience shall comply with the following.

1.4.1 Certified Professional

The Contractor shall utilize a qualified and competent person as defined in Section 01 of EM 385-1-1 to develop the required safety and health submittal and to provide on-site safety and health services during the contract period. The person shall be a Certified Industrial Hygienist (CIH), an Industrial Hygienist (IH), or a Certified Safety Professional (CSP) with a minimum of 3 years of demonstrated experience in similar related work. The Contractor shall certify that the Certified Industrial Hygienist (CIH) holds current and valid certification from the American Board of Industrial Hygiene (ABIH), that the IH is considered board eligible by written confirmation from the ABIH, or that the CSP holds current and valid certification from the American Board of Certified Safety Professionals. The CIH, IH, or CSP may utilize other qualified and competent persons, as defined in EM 385-1-1, to conduct on-site safety and health activities as long as these persons have a minimum of 2 years of demonstrated experience in similar related work and are under the direct supervision of the CIH, IH, or CSP. For lead containing jobsites, the competent and qualified person shall have successfully completed an EPA or state accredited lead-based paint abatement Supervisor course specific to the work to be performed and shall possess current and valid state and/or local government certification, as required.

1.4.2 Certified Laboratory

The Contractor shall provide documentation which includes the name, address, and telephone number of the laboratories to be providing services. In addition, the documentation shall indicate that each laboratory is an EPA National Lead Laboratory Accreditation Program (NLLAP) accredited laboratory

and that each is rated proficient in the NIOSH/EPA Environmental Lead Proficiency Analytical Testing Program (ELPAT)and will document the date of current accreditation. Certification shall include accreditation for heavy metal analysis, list of experience relevant to analysis of lead in air, and a Quality Assurance and Quality Control Program.

1.4.3 Qualified Painting Contractor

The Contractor shall be a certified SSPC-QP 1 Painting Contractor.

<TAI OPT=QP-2 HAZARDOUS PAINT REMOVAL CONTRACTOR>1.4.4 Qualified Hazardous Paint Removal Contractor

The Contractor shall be a certified SSPC-QP 2 Painting Contractor.

1.4.5 Qualified Paint Applicator

Documentation of certification shall be submitted for all paint applicators. Prior to the initiation of any work all paint applicators shall be tested and certified as meeting the requirements of the qualified paint applicator. Certification shall be administered by the government approved independent third party Test Agency. Applicators failing the certification test shall not be permitted to apply any paint on the project.

1.4.5.1 Test Plate

The test plate shall consist of a 6 feet by 6 feet steel plate with a 3/8 inch minimum thickness. The test plate shall have at least six bolts, three with bolt heads exposed and three with threads exposed, a 12-inch wide flange and a 6-inch diameter pipe each 18 inches long welded perpendicular to the test panel and a 6-inch deep T-beam with sealed ends welded horizontal across the test panel one foot up from the bottom all within the area to be painted on one side. Bolts shall be 1 inch minimum diameter.

1.4.5.2 Certification Test Procedure

Certification testing of paint applicators shall be conducted at the job site in coordination with the Contracting Officer. The Contractor shall supply the fabricated test plates to be used for the tests and shall provide crane service, rigging, and any other work necessary to provide accessibility for the certification testing and inspection. In preparation, the Contractor shall clean and prepare the test plates in accordance with the requirements of the contracted work. Abrasive blasting shall be performed with the blast media to be used in the contract. The paints to be applied shall be the Contractor supplied materials and shall be those previously tested and approved for use on the contract. Paints shall be applied as specified in the contract. The painter being tested shall mix and thin the paints to be used in the test and shall set up and adjust the application equipment for use. Each painter shall apply each of the types of paint comprising the specified system. The test plate shall be painted in a near vertical position.

1.4.5.3 Certification Criteria

The paint applicator shall be evaluated based on the conformance of the applied paint system to the requirements of the specifications. Deficiencies in the coatings, improper mixing or improper application

methods are basis for failure. The Test Agency shall be the sole judge as to the acceptability of each paint applicators performance.

1.4.6 Coating Thickness Gage Qualification

Documentation of certification shall be submitted for all coating thickness gages. Magnetic flux thickness gages as described in ASTM D 1186 shall be used to make all coating thickness measurements on ferrous metal substrates. Eddy current thickness gages as described in ASTM D 1400 shall be used to measure coating thickness on all nonferrous metal substrates. Gages shall have an accuracy of +/- 3 percent or better. Gages to be used on the job shall be certified by the manufacturer as meeting these requirements.

1.5 SAMPLING AND TESTING

The Contractor shall allow at least 30 days for sampling and testing. Sampling may be at the jobsite or source of supply. The Contractor shall notify the Contracting Officer when the paint and thinner are available for sampling. Sampling of each batch shall be witnessed by the Contracting Officer unless otherwise specified or directed. A 1-quart sample of paint and thinner shall be submitted for each batch proposed for use. The sample shall be labeled to indicate formula or specification number and nomenclature, batch number, batch quantity, color, date made, and applicable project contract number. Testing will be performed by the Government. Costs for retesting rejected material will be deducted from payments to the Contractor at the rate of 500 dollars for each paint sample retested and 500 dollars for each thinner retested.

1.6 SAFETY AND HEALTH PROVISIONS

Work shall be performed in accordance with the requirements of 29 CFR 1910, 29 CFR 1926, EM 385-1-1, and other references as listed herein. Matters of interpretation of the standards shall be submitted to the Contracting Officer for resolution before starting work. Where the regulations conflict, the most stringent requirements shall apply. Paragraph SAFETY AND HEALTH PROVISIONS supplements the requirements of EM 385-1-1, paragraph (1). In any conflict between Section 01 of EM 385-1-1 and this paragraph, the provisions herein shall govern.

1.6.1 Abrasive Blasting

The Contractor shall comply with the requirements in Section 06.H of EM 385-1-1.

1.6.1.1 Hoses And Nozzles

In addition to the requirements in Section 20 of EM 385-1-1, hoses and hose connections of a type to prevent shock from static electricity shall be used. Hose lengths shall be joined together by approved couplings of a material and type designed to prevent erosion and weakening of the couplings. The couplings and nozzle attachments shall fit on the outside of the hose and shall be designed to prevent accidental disengagement.

1.6.1.2 Workers Other Than Blasters

Workers other than blasting operators working in close proximity to abrasive blasting operations shall be protected by utilizing MSHA/NIOSH-approved

half-face or full-face air purifying respirators equipped with high-efficiency particulate air (HEPA) filters, eye protection meeting or exceeding ANSI Z87.1 and hearing protectors (ear plugs and/or ear muffs) providing a noise reduction rating of at least 20 dBA or as needed to provide adequate protection.

1.6.2 Cleaning with Compressed Air

Cleaning with compressed air shall be in accordance with Section 20.B.5 of EM 385-1-1 and personnel shall be protected as specified in 29 CFR 1910.134.

1.6.3 Cleaning with Solvents

1.6.3.1 Ventilation

Ventilation shall be provided where required by 29 CFR 1910.146 or where the concentration of solvent vapors exceeds 10 percent of the Lower Explosive Limit (LEL). Ventilation shall be in accordance with 29 CFR 1910.94, paragraph (c)(5).

1.6.3.2 Personal Protective Equipment

Personal protective equipment shall be provided where required by 29 CFR 1910.146 and in accordance with 29 CFR 1910, Subpart I.

1.6.4 Pretreatment of Metals and Concrete with Acids

1.6.4.1 Personal Protective Equipment

Personnel shall be protected in accordance with 29 CFR 1910, Subpart I.

1.6.4.2 Emergency Equipment

In addition to the requirements of Section 05 of EM 385-1-1, the Contractor shall provide an eyewash in accordance with ANSI Z358.1, paragraph (6).

1.6.5 Mixing Epoxy and Polyurethane Resin Formulations

1.6.5.1 Exhaust Ventilation

Local exhaust ventilation shall be provided in the area where the curing agent and resin are mixed. This ventilation system shall be capable of providing at least 100 linear fpm of capture velocity measured at the point where the curing agent and resin contact during mixing.

1.6.5.2 Personal Protective Equipment

Exposure of skin and eyes to epoxy resin components shall be avoided by wearing appropriate chemically resistant gloves, apron, safety goggles, and face shields meeting or exceeding the requirements of ANSI Z87.1.

1.6.5.3 Medical Precautions

Individuals who have a history of sensitivity to epoxy or polyurethane resin systems shall be medically evaluated before any exposure can occur. Individuals who are medically evaluated as exhibiting a sensitivity to epoxy resins shall not conduct work tasks or otherwise be exposed to such

chemicals. Individuals who develop a sensitivity shall be immediately removed from further exposure and medically evaluated.

1.6.5.4 Emergency Equipment

A combination unit, comprised of an eyewash and deluge shower, within close proximity to the epoxy or polyurethane resin mixing operation shall be provided in accordance with ANSI Z358.1, paragraph (9).

1.6.6 Paint Application

1.6.6.1 Ventilation

When using solvent-based paint in confined spaces, ventilation shall be provided to exchange air in the space at a minimum rate of 5,000 cubic feet per minute per spray gun in operation. It may be necessary to install both a mechanical supply and exhaust ventilation system to effect adequate air changes within the confined space. All air-moving devices shall be located and affixed to an opening of the confined space in a manner that assures that the airflow is not restricted or short circuited and is supplied in the proper direction. Means of egress shall not be blocked. Ventilation shall be continued after completion of painting and through the drying phase of the operation. If the ventilation system fails or the concentration of volatiles exceeds 10 percent of the LEL (except in the zone immediately adjacent to the spray nozzle), painting shall be stopped and spaces evacuated until such time that adequate ventilation is provided. An audible alarm that signals system failure shall be an integral part of the ventilation system. The effectiveness of the ventilation shall be checked by using ventilation smoke tubes and making frequent oxygen and combustible gas readings during painting operations. Exhaust ducts shall discharge clear of the working areas and away from possible sources of ignition.

1.6.6.2 Explosion Proof Equipment

Electrical wiring, lights, and other equipment located in the paint spraying area shall be of the explosion proof type designed for operation in Class I, Division 1, Group D, hazardous locations as required by the NFPA 70. Electrical wiring, motors, and other equipment, outside of but within 20 feet of any spraying area, shall not spark and shall conform to the provisions for Class I, Division 2, Group D, hazardous locations. Electric motors used to drive exhaust fans shall not be placed inside spraying areas or ducts. Fan blades and portable air ducts shall be constructed of nonferrous materials. Motors and associated control equipment shall be properly maintained and grounded. The metallic parts of air-moving devices, spray guns, connecting tubing, and duct work shall be electrically bonded and the bonded assembly shall be grounded.

1.6.6.3 Further Precautions

a. Workers shall wear nonsparking safety shoes.

b. Solvent drums taken into the spraying area shall be placed on nonferrous surfaces and shall be grounded. Metallic bonding shall be maintained between containers and drums when materials are being transferred.

c. Insulation on all power and lighting cables shall be inspected to ensure that the insulation is in excellent working condition and is free of all cracks and worn spots. Cables shall be further inspected to ensure that no connections are within 50 feet of the operation, that lines are not overloaded, and that they are suspended with sufficient slack to prevent undue stress or chafing.

1.6.6.4 Ignition Sources

Ignition sources, to include lighted cigarettes, cigars, pipes, matches, or cigarette lighters shall be prohibited in area of solvent cleaning, paint storage, paint mixing, or paint application.

1.6.7 Health Protection

1.6.7.1 Air Sampling

The Contractor shall perform air sampling and testing as needed to assure that workers are not exposed to contaminants above the permissible exposure limit. In addition, the Contractor shall provide the Contracting Officer with a copy of the test results from the laboratory within five working days of the sampling date and shall provide results from direct-reading instrumentation on the same day the samples are collected.

1.6.7.2 Respirators

During all spray painting operations, spray painters shall use approved SCBA or SAR (air line) respirators, unless valid air sampling has demonstrated contaminant levels to be consistently within concentrations that are compatible with air-purifying respirator Assigned Protection Factor (APF). Persons with facial hair that interferes with the sealing surface of the facepiece to faceseal or interferes with respirator valve function shall not be allowed to perform work requiring respiratory protection. Air-purifying chemical cartridge/canister half- or full-facepiece respirators that have a particulate prefilter and are suitable for the specific type(s) of gas/vapor and particulate contaminant(s) may be used for nonconfined space painting, mixing, and cleaning (using solvents). These respirators may be used provided the measured or anticipated concentration of the contaminant(s) in the breathing zone of the exposed worker does not exceed the APF for the respirator and the gas/vapor has good warning properties or the respirator assembly is equipped with a NIOSH-approved end of service life indicator for the gas(es)/vapor anticipated or encountered. Where paint contains toxic elements such as lead, cadmium, chromium, or other toxic particulates that may become airborne during painting in nonconfined spaces, air-purifying half- and full-facepiece respirators or powered air-purifying respirators equipped with appropriate gas vapor cartridges, in combination with a high-efficiency filter, or an appropriate canister incorporating a high-efficiency filter, shall be used.

1.6.7.3 Protective Clothing and Equipment

All workers shall wear safety shoes or boots, appropriate gloves to protect against the chemical to be encountered, and breathable, protective, full-body covering during spray-painting applications. Where necessary for emergencies, protective equipment such as life lines, body harnesses, or other means of personnel removal shall be used during confined-space work.

1.7 MEDICAL STATUS

Prior to the start of work and annually thereafter, all Contractor employees working with or around paint systems, thinners, blast media, those required to wear respiratory protective equipment, and those who will be exposed to high noise levels shall be medically evaluated for the particular type of exposure they may encounter. Medical records shall be maintained as required by 29 CFR 1910.20. The evaluation shall include:

a. Audiometric testing and evaluation of employees who will work in a noise environment with a time weighted average greater than or equal to 90 dBA.

b. Vision screening (employees who use full-facepiece respirators shall not wear contact lenses).

c. Medical evaluation shall include, but shall not be limited to, the following:

(1) Medical history including, but not limited to, alcohol use, with emphasis on liver, kidney, and pulmonary systems, and sensitivity to chemicals to be used on the job.

(2) General physical examination with emphasis on liver, kidney, and pulmonary system.

(3) Determination of the employee's physical and psychological ability to wear respiratory protective equipment and to perform job-related tasks.

(4) Determination of baseline values of biological indices for later comparison to changes associated with exposure to paint systems and thinners or blast media, which include: liver function tests to include SGOT, SGPT, GGPT, alkaline phosphates, bilirubin, complete urinalysis, EKG (employees over age 40), blood urea nitrogen (bun), serum creatinine, pulmonary function test, FVC, and FEV, chest x-ray (if medically indicated), blood lead and ZPP (for individuals where it is known there will be an exposure to materials containing lead), other criteria that may be deemed necessary by the Contractor's physician, and Physician's statements for individual employees that medical status would permit specific task performance.

(5) For lead-based paint removal, the medical requirements of 29 CFR 1926.62 shall also be included.

1.8 CHANGE IN MEDICAL STATUS

Any employee whose medical status has changed negatively due to work related chemical and/or physical agent exposure while working with or around paint systems and thinners, blast media, or other chemicals shall be evaluated by a physician, and the Contractor shall obtain a physicians statement as described in paragraph MEDICAL STATUS prior to allowing the employee to return to those work tasks. The Contractor shall notify the Contracting Officer in writing of any negative changes in employee medical status and the results of the physicians reevaluation statement.

1.9 ENVIRONMENTAL PROTECTION

In addition to the requirements of section 01354 the Contractor shall comply with the following environmental protection criteria.

1.9.1 Waste Classification, Handling, and Disposal

The Contractor shall be responsible for assuring the proper disposal of all hazardous and nonhazardous waste generated during the project. Waste generated from abrasive blasting lead-containing paints with recyclable steel or iron abrasives shall be disposed of as a hazardous waste or shall be stabilized with proprietary pre-blast additives regardless of the results of 40 CFR 261, App II, Mtd 1311. Where stabilization is preferred, the contractor shall employ a proprietary blast additive, that has been blended with the blast media prior to use. Hazardous waste shall be placed in properly labeled closed containers and shall be shielded adequately to prevent dispersion of the waste by wind or water. Any evidence of improper storage shall be cause for immediate shutdown of the project until corrective action is taken. Nonhazardous waste shall be stored in closed containers separate from hazardous waste storage areas. All hazardous waste shall be transported by a licensed transporter in accordance with 40 CFR 263 and 49 CFR 171, Subchapter C. All nonhazardous waste shall be transported in accordance with local regulations regarding waste transportation. In addition to the number of manifest copies required by 40 CFR 262.22, one copy of each manifest will be supplied to the Contracting Officer prior to transportation.

1.9.2 Containment

The Contractor shall contain debris generated during paint removal operations in accordance with the requirements of SSPC Guide 6. Where required the containment air pressure shall be verified by instrument. Where required the minimum air movement velocity shall be 100 fpm for cross-draft ventilation or 60 fpm for downdraft ventilation.

1.9.3 Visible Emissions Monitoring

The time of emissions shall be measured in accordance with 40 CFR 60, App A, Mtd 22. Visible emissions shall be monitored for not less than 15 minutes of every hour. Visible emissions for each hour shall be calculated by extrapolation. In no case shall visible emissions extend greater than 150 feet in any direction horizontal from the containment. In no case shall visible emissions be observed in the area of any sensitive receptor. If such emissions occur the job shall be shut down immediately and corrective action taken. The foreman shall be notified whenever visible emissions exceed 40 seconds in a 1 hour period. The foreman shall be notified and the job shall be shut down and corrective action taken whenever visible emissions exceed 75 seconds in a 2 hour period. Total observed visible emissions from the containment shall not exceed 5 percent of the work day. Shutdown and corrective action shall be taken by the Contractor to prevent such an occurrence. The Contractor shall document each time that the work is halted due to a violation of the visible emissions criteria. Documentation shall include the cause for shutdown and the corrective action taken to resolve the problem.

1.9.4 Air Quality Monitoring

1.9.4.1 PM-10 Monitoring

The Contractor shall perform PM-10 monitoring. The positioning of air monitoring equipment shall be in accordance with 40 CFR 58, App E, Subpart (8). In addition, a minimum of two PM-10 monitors shall be used at the project site, one down wind from the project and one in the area of greatest public access (e.g., playground, school yard, or homeowner's yard). When the project is in an area where there are critical receptors nearby, monitoring shall be conducted throughout the entire period that abrasive blasting and cleanup operations are performed. Otherwise, monitoring shall be performed 4 of the first 8 days and on a regular basis thereafter for a sum total of 25 percent of the time surface preparation and debris cleanup are performed. Failure to meet air quality regulatory limits shall require air monitoring to be repeated immediately after corrective actions have been taken. The Contractor shall also conduct preproject PM-10 monitoring. The preproject PM-10 monitoring shall be conducted a minimum of 2 weeks prior to the beginning of the project. The monitoring shall continue for a minimum of 3 days to establish background levels. A report of the results shall be submitted to the Contracting Officer within 48 hours and shall include:

(1) Name and location of jobsite.

(2) Date of monitoring.

(3) Time of monitoring (i.e., time monitoring begins and ends each day).

(4) Identification and serial number of monitoring units.

(5) Drawing showing specific location of monitoring units.

(6) Drawing showing specific location of paint removal operation and the method of removal or work activity being performed.

(7) Wind direction and velocity.

(8) A flow chart verifying the rate of air flow across the filter throughout the sampling period.

(9) Name and address of laboratory.

(10) Laboratory test procedure.

(11) Laboratory test results.

(12) Signatures of field and laboratory technicians conducting the work.

1.9.4.2 TSP Monitoring

The Contractor shall perform TSP monitoring. The positioning of air monitoring equipment shall be in accordance with 40 CFR 58, App E, Subpart (8). In addition, a minimum of two TSP monitors shall be used at the project site, one down wind from the project and one in the area of greatest public access (e.g. playground, school yard, or homeowner's yard). TSP-lead monitoring shall be conducted in accordance with 40 CFR 50, App B. When the project is in an area where there are critical receptors nearby, monitoring

shall be conducted throughout the entire period that abrasive blasting and cleanup operations are performed. Otherwise, monitoring shall be performed 4 of the first 8 days and on a regular basis thereafter for a sum total of 25 percent of the time surface preparation and debris cleanup are performed. Failure to meet air quality regulatory limits shall require air monitoring to be repeated immediately after corrective actions have been taken. The Contractor shall also conduct preproject TSP monitoring. The preproject TSP monitoring shall be conducted a minimum of 2 weeks prior to the beginning of the project. The monitoring shall continue for a minimum of 3 days to establish background levels. A report of the results shall be submitted to the Contracting Officer within 48 hours and shall include:

(1) Name and location of jobsite.

(2) Date of monitoring.

(3) Time of monitoring (i.e., time monitoring begins and ends each day).

(4) Identification and serial number of monitoring units.

(5) Drawing showing specific location of monitoring units.

(6) Drawing showing specific location of paint removal operation and the method of removal or work activity being performed.

(7) Wind direction and velocity.

(8) A flow chart verifying the rate of air flow across the filter throughout the sampling period.

(9) Name and address of laboratory.

(10) Laboratory test procedure.

(11) Laboratory test results.

(12) Signatures of field and laboratory technicians conducting the work.

1.9.5 Water Quality

The Contractor shall conduct operations in such a manner that lead-containing and other hazardous paint debris do not contaminate the water and so that NPDES permits per EPA regulation 40 CFR 122 are not required for the project. In the event that there are any releases of lead paint debris into the waterways, with reportable quantities of hazardous substances designated pursuant to Section 311 of the Clean Water Act, they shall be reported to the EPA in accordance with 40 CFR 117 and 40 CFR 355. Releases or spills that carry into waterways or storm sewers shall be thoroughly documented. The documentation shall include the time and location of the release, amount of material released, actions taken to clean up the debris, amount of debris recovered, and corrective action taken to avoid a reoccurrence. Releases shall also be reported to the Coast Guard and other state and local authorities as appropriate. If the release is equivalent to 10 pounds or more of lead-containing material in a 24-hour period, it is considered to be

a reportable quantity under CERCLA. The Contractor shall comply with 40 CFR 302.

1.9.6 Soil Quality

The Contractor shall establish and implement practices and procedures for preventing contamination of the soil from the removal of lead-containing or other hazardous paints. Unless otherwise directed by the Contracting Officer, soil shall be considered to have been contaminated by the Contractor's operation if an increase in the total lead content of 100 PPM or greater over background levels occurs. For purposes of computing the increase compute the mean background levels and the mean post-removal levels. The 100 PPM criteria is met if the difference between the means is less than 100 PPM plus the 95 percent confidence limit. Soil sampling and testing shall be conducted prior to the beginning of the project and after the project is completed. Interim testing may also be performed in the event the Contractor or Contracting Officer wants to confirm that the containment system and work practices continue to provide satisfactory protection of the soil. Unless otherwise directed by the Contracting Officer, the following minimum test locations shall be selected for soil analysis. Two locations shall be selected beneath or immediately adjacent to the structure being prepared, and additional samples shall be taken within 100 feet in each direction of the project (i.e., N, S, E, W) in which soil is present. The number of soil sample locations shall be sufficient to adequately characterize the soil contaminant levels within and around the project area. Five composite samples shall be collected at each location. Each of the five samples shall be comprised of five individual plugs of soil combined in a single bag. The composite samples at each location shall be collected using the following procedure:

a. Place a 1-square foot template at each location.

b. Remove a sample of soil 3/4 inch in diameter and 1/2 inch in depth at the center of the template and at each of the four corners. Place the five soil plugs into a single bag. This represents one of the three samples to be removed at a given location.

c. Move the template 1 inch in any direction and repeat the process to collect the second sample. Place all plugs in a separate bag. Move the template 1 inch farther to collect the third sample.

d. Identify each sample bag with the date, specific location of the sample, name and signature of the sampling technician, and complete chain of custody records.

e. It is critical that the specific location of each sample be thoroughly measured and documented as the final project testing (and any interim testing) must be sampled in the precise locations.

Three samples collected at each location shall be analyzed. One of the remaining two samples shall be maintained by the Contractor for the duration of the project and the other by the Contracting Officer in the event reanalysis is required. Lead-containing samples shall be analyzed in accordance with EPA testing guidance as published in 40 CFR 261, App III, by a laboratory listed by the American Industrial Hygiene Association (AIHA) as being proficient in conducting the test. The Contractor shall note that if it is determined that contamination of the soil has occurred as a result of

the paint removal operations, TCLP testing will be employed to determine if the soil must be handled and disposed of as a hazardous waste. The initial sampling of the soil for total lead content does not establish whether the soil would be considered hazardous by TCLP testing. As a result, at the Contractor's option, additional prework soil samples may be removed (minimum of 105 grams is required for a single test at each site) to conduct TCLP testing to establish whether the soil would be classified as hazardous prior to project startup. In the event that there is a release of lead paint debris onto the soil and if the release is 10 pounds or more of lead-containing material in a 24-hour period, it is considered to be a reportable quantity under CERCLA. The Contractor shall comply with 40 CFR 302. The Contractor shall thoroughly document the occurrence of any spills of lead debris into the soil. The documentation shall include the time and location of the release, amount of material released, actions taken to clean up the debris, amount of debris reclaimed, and corrective action taken to avoid a reoccurrence. The documentation shall be provided to the Contracting Officer and shall also include the results of laboratory testing.

1.10 PAINT PACKAGING, DELIVERY, AND STORAGE

Paints shall be processed and packaged to ensure that within a period of one year from date of manufacture, they will not gel, liver, or thicken deleteriously, or form gas in the closed container. Paints, unless otherwise specified or permitted, shall be packaged in standard containers not larger than 5 gallons, with removable friction or lug-type covers. Containers for vinyl-type paints shall be lined with a coating resistant to solvents in the formulations and capable of effectively isolating the paint from contact with the metal container. Each container of paint or separately packaged component thereof shall be labeled to indicate the purchaser's order number, date of manufacture, manufacturer's batch number, quantity, color, component identification and designated name, and formula or specification number of the paint together with special labeling instructions, when specified. Paint shall be delivered to the job in unbroken containers. Paints that can be harmed by exposure to cold weather shall be stored in ventilated, heated shelters. All paints shall be stored under cover from the elements and in locations free from sparks and flames.

PART 2 PRODUCTS

2.1 SPECIAL PAINT FORMULAS

Special paints shall have the composition as indicated in the formulas listed herein. Where so specified, certain components of a paint formulation shall be packaged in separate containers for mixing on the job. If not specified or otherwise prescribed, the color shall be that naturally obtained from the required pigmentation.

2.2 PAINT FORMULATIONS

Special paint formulas shall comply with the following:

2.2.1 Formula V-102e, Vinyl-Type Ready-Mixed Aluminum Impacted Immersion Coating

INGREDIENTS	PERCENT BY MASS
Vinyl Resin, Type 3	18.2

Aluminum Powder	8.3
Diisodecyl Phthalate	3.1
Methyl Isobutyl Ketone	33.8
Toluene	36.6
	100.0

a. The paint shall be furnished with the aluminum pigment mixed into the vehicle.

b. The viscosity of the paint shall be between 60 and 90 seconds using ASTM D 1200 and a No. 4 Ford cup.

2.2.2 Formula V-106d, Vinyl-Type Red Oxide (Light or Dark Color) Impacted Immersion Coating

INGREDIENTS	PERCENT BY MASS
Vinyl Resin, Type 3	5.50
Vinyl Resin, Type 4	11.20
Synthetic Iron Oxide (Red) (Light or Dark Color)	15.80
Diisodecyl Phthalate	2.90
Methyl Isobutyl Ketone	31.00
Toluene	33.54
Propylene Oxide	0.06
	100.00

a. The pigment shall be dispersed by means of pebble mills or other approved methods to produce a fineness of grind (ASTM D 1210) of not less than 7 on the Hegman scale. Grinding in steel-lined or steel-ball mills will not be permitted. No grinding aids, antisettling agents, or any other materials, other than those listed in the formula, will be permitted.

b. The viscosity of the paint shall be between 60 and 90 seconds using ASTM D 1200 and a No. 4 Ford cup.

c. The paint shall be furnished in two colors which are obtained by the alternative use of synthetic red iron oxide pigments of different shade. The dark paint shall reasonably approximate color 10076 of FED-STD-595B(1), and light colored paint shall be readily distinguishable in the field from the dark. The two shades shall be furnished in the volume ratio designated by the purchaser.

2.2.3 Formula V-766e, Vinyl-Type White (or Gray) Impacted Immersion Coating

INGREDIENTS	PERCENT BY MASS
Vinyl Resin, Type 3	5.6
Vinyl Resin, Type 4	11.6
Titanium Dioxide and (for Gray) Carbon Black	13.0
Diisodecyl Phthalate	2.9
Methyl Isobutyl Ketone	32.0
Toluene	34.7
Ortho-Phosphoric Acid	0.2

	100.0

a. The dispersion of pigment shall be accomplished by means of pebble mills or other approved methods to produce a fineness of grind (ASTM D 1210) of not less than 7 on the Hegman scale. Grinding in steel-lined or steel-ball mills will not be permitted. No grinding aids, antisettling agents, or any other materials except those shown in the formula will be permitted. The paint shall show the proper proportions of specified materials when analyzed by chromatographic and/or spectrophotometric methods. The ortho-phosphoric acid shall be measured accurately and diluted with at least four parts of ketone to one part of acid and it shall be slowly incorporated into the finished paint with constant and thorough agitation.

b. The viscosity of the paint shall be between 60 and 90 seconds using ASTM D 1200 and a No. 4 Ford cup.

c. The white and gray paints shall be furnished in the volume ratio designated by the purchaser. The gray paint shall contain no pigments other than those specified. Enough carbon black shall be included to produce a dry paint film having a reflectance of 20-24 (ASTM E 1347). The resulting gray color shall approximate color 26231 of FED-STD-595B(1).

2.2.4 Formula V-103C, Vinyl-Type Black-Finish Impacted Immersion Coating

INGREDIENTS	PERCENT BY MASS
Vinyl Resin Type 3	20.0
Carbon Black	1.5
Diisodecyl Phthalate	3.4
Methyl Isobutyl Ketone	36.0
Toluene	39.1
	100.0

a. The carbon black shall be dispersed to a fineness of grind (ASTM D 1210) of not less than 7 on the Hegman scale. A paste composed of carbon black milled into a Type 3 vinyl resin dissolved in an appropriate solvent may be used provided the finished product has the specification composition and grind. Material shall be free from seeding, gelling, and other deleterious effects. No grinding aids, antisettling agents, or any other materials except those shown in the formula will be permitted.

b. The viscosity of the paint shall be between 60 and 90 seconds using ASTM D 1200 and a No. 4 Ford cup.

2.2.5 Formula VZ-108d, Vinyl-Type Zinc-Rich Impacted Immersion Coating

INGREDIENTS	PERCENT BY WEIGHT	POUNDS	GALLONS
COMPONENT A			
Vinyl Resin, Type 3	16.6	109.2	9.65
Methyl Isobutyl Ketone	80.6	528.9	79.30

Suspending Agent E	0.7	4.6	0.28
Suspending Agent F	0.4	2.7	0.19
Methanol	0.5	3.3	0.50
Synthetic Iron Oxide (Red)	1.2	7.9	0.19
	100.0	656.6	90.11
COMPONENT B			
Silane B	100.0	4.1	0.47
COMPONENT C			
Zinc Dust	100.0	550.0	9.42
			100.00 (mixed paint)

a. The iron oxide and suspending agents shall be dispersed into the vehicle (Component A) to a fineness of grind of not less than 4 on the Hegman scale (ASTM D 1210). Grinding in steel-lined containers or using steel-grinding media shall not be permitted. The sole purpose of the iron oxide pigment is to produce a contrasting color. A red iron oxide-type 3 vinyl resin vehicle paste may be used in place of dry iron oxide provided compensating adjustment are made in the additions of Type 3 resin and methyl isobutyl ketone. The finished product with zinc dust added shall produce a paint which has a red tone upon drying and a reflectance of not more than 16 (ASTM E 1347).

b. VZ-108d paint shall be supplied as a kit. Each kit shall consist of 4.5 gallons (33.1 pounds) of Component A in a 5-gallon lug closure type pail, 27.5 pounds of zinc dust (Component C) packaged in a 1-gallon plastic pail, and 3 fluid ounces of silane (Component B) packaged in a glass bottle of suitable size having a polyethylene lined cap. The bottle of silane shall be placed on the zinc dust in the 1-gallon pail. In addition to standard labeling requirements, each container of each component shall be properly identified as to component type and each container label of Component A shall carry the following: MIXING AND APPLICATION INSTRUCTIONS: WARNING - THIS PAINT WILL NOT ADHERE TO STEEL SURFACES UNLESS COMPONENT B IS ADDED. Remove the 3 ounces of bottled Component B (silane) from the Component C (zinc dust) container and add to the base paint Component A) with thorough stirring. Then sift the zinc dust into the base paint while it is being vigorously agitated with a power-driven stirrer and continue the stirring until the zinc dust has been dispersed. The mixed paint shall at some point be strained through a 30-60 mesh screen to prevent zinc dust slugs from reaching the spray gun nozzle. The paint shall be stirred continuously during application at a rate that will prevent settling. If spraying is interrupted for longer than 15 minutes, the entire length of the hose shall be whipped vigorously to redisperse the zinc. If the spraying is to be interrupted for more than 1 hour, the hose shall be emptied by blowing the paint back into the paint pot. Thinning will not normally be required when ambient temperatures are below about 80 degrees F, but when the ambient and steel temperatures are higher, methyl isoamyl ketone (MIAK) or methyl isobutyl ketone

(MIBK) should be used. If paint is kept covered at all times, its pot life will be about 8 days.

2.2.6 Formula C-200a, Coal Tar-Epoxy (Black) Paint

The paint shall conform to SSPC Paint 16 manufactured with Type 1 pitch. In addition to standard labeling, container labels shall include the term, Corps of Engineers Formula C-200a.

2.2.7 Formula P-38, Aluminum Phenolic Finish Coat

This material shall be a ready-mixed aluminum paint. The pigment shall be leafing aluminum powder or paste conforming to the requirements of ASTM D 962 Types I or II, Class B, Medium. The vehicle shall be a phenolic resin varnish of 33-gallon oil length. The resin portion of the vehicle shall be a dry granular phenol-formaldehyde resin made from aliphatic para-substituted phenols with substituting groups containing four to eight carbon atoms. The oil portion of the vehicle shall consist of not less than 80% tung oil conforming to ASTM D 12 and the remainder shall be alkali refined linseed oil. The vehicle shall not contain rosin derivatives. Paint solvents shall consist of aliphatic and aromatic hydrocarbons as necessary. The paint shall meet the requirements of paragraphs Quantitative Requirements and Water Resistance.

2.2.7.1 Quantitative Requirements

The paint shall have the following properties.

Characteristics	Requirement (minimum/maximum)
Pigment, percent by weight of paint	13 / --
Volatile, percent by weight of paint, ASTM D 2369	-- / 45
Nonvolatile vehicle, percent by weight of paint	42 / --
Viscosity, seconds, ASTM D 1200	35 / 45
Flash point, Degrees F (C), ASTM D 4206	86 (30)/ --
Leafing, percent	50 / --
Density, pounds per gallon, ASTM D 1475	8 / --
Dry, set-to-touch, hours, ASTM D 1640	0.5 / 2
Dry, to recoat, hours, ASTM D 1640	-- / 16

2.2.7.2 Water Resistance

Prepare a test panel by spray applying two coats of paint to a 3 by 6 inch solvent cleaned matte-finish steel test plate. Each coat shall have a dry film thickness of approximately 2.0 mils. Allow 24 hours dry time between coats. Air dry the prepared panel 72 hours and immerse in distilled water at73 +/- 2F for 72 hours in accordance with ASTM D 1308. The test paint shall exhibit no wrinkling or blistering immediately upon removal of the panel from the water. The paint shall be no more than slightly affected when examined two hours after removal and after 24 hours shall show no more than a slight visible whitening or dulling in comparison to the unexposed film.

2.3 INGREDIENTS FOR SPECIAL PAINT FORMULAS

The following ingredient materials and thinners apply only to those special paints whose formulas are shown above in detail.

2.3.1 Pigments and Suspending Agents

2.3.1.1 Aluminum Powder

For vinyl paint aluminum powder shall conform to ASTM D 962, Type 1, Class B.

2.3.1.2 Carbon Black

Carbon black shall conform to ASTM D 561, Type I or II.

2.3.1.3 Zinc Dust

Zinc dust pigment shall conform to ASTM D 520, Type II.

2.3.1.4 Iron Oxide

Iron oxide, (Dry) synthetic (red), shall conform to ASTM D 3721. In addition, the pigment shall have a maximum oil absorption of 24 and a specific gravity of 4.90 to 5.20 when tested in accordance with ASTM D 281 and ASTM D 153, Method A, respectively. When the pigment is dispersed into specified vinyl paint formulation, the paint shall have color approximating FED-STD-595 color 10076 (dark red paint), and shall show no evidence of incompatibility or reaction between pigment and other components after 6 months storage.

2.3.1.5 Titanium Dioxide

Titanium dioxide in vinyl paint Formula V-766e shall be one of the following: Kronos 2160 or 2101, Kronos, Inc.; Ti-Pure 960, E.I. Dupont DeNemours and Co., Inc.

2.3.1.6 Suspending Agent E

Suspending Agent E shall be a light cream colored finely divided powder having a specific gravity of 2 to 2.3. It shall be an organic derivative of magnesium aluminum silicate mineral capable of minimizing the tendency of zinc dust to settle hard without increasing the viscosity of the paint appreciably. MPA-14, produced by RHEOX, Inc., has these properties.

2.3.1.7 Suspending Agent F

Suspending Agent F shall be a light cream colored finely divided powder having a specific gravity of approximately 1.8. It shall be an organic derivative of a special montmorillonite (trialkylaryl ammonium hectorite). Bentone 27, produced by RHEOX, Inc., has these properties.

2.3.2 Resins, Plasticizer, and Catalyst

2.3.2.1 Diisodecyl Phthalate

Diisodecyl Phthalate shall have a purity of not less than 99.0 percent, shall contain not more than 0.1 percent water, and shall have an acid number (ASTM D 1045) of not more than 0.10.

2.3.2.2 Vinyl Resin, Type 3

Vinyl resin, Type 3, shall be a vinyl chloride-acetate copolymer of medium average molecular weight produced by a solution polymerization process and shall contain 85 to 88 percent vinyl chloride and 12 to 15 percent vinyl acetate by weight. The resin shall have film-forming properties and shall, in specified formulations, produce results equal to Vinylite resin VYHH, as manufactured by the Union Carbide Corporation.

2.3.2.3 Vinyl Resin, Type 4

Vinyl resin, Type 4, shall be a copolymer of the vinyl chloride-acetate type produced by a solution polymerization process, shall contain (by weight) 1 percent interpolymerized dibasic acid, 84 to 87 percent vinyl chloride, and 12 to 15 percent vinyl acetate. The resin shall have film-forming properties and shall, in the specified formulations, produce results equal to Vinylite resin VMCH, as manufactured by the Union Carbide Corporation.

2.3.2.4 Ortho-phosphoric Acid

Ortho-phosphoric acid shall be a chemically pure 85-percent grade.

2.3.3 Solvent and Thinners

2.3.3.1 Methanol

Methanol (methyl alcohol) shall conform to ASTM D 1152.

2.3.3.2 Methyl Ethyl Ketone

Methyl ethyl ketone (MEK) shall conform to ASTM D 740.

2.3.3.3 Methyl Isobutyl Ketone

Methyl isobutyl ketone (MIBK) shall conform to ASTM D 1153.

2.3.3.4 Methyl Isoamyl Ketone

Methyl isoamyl ketone (MIAK) shall conform to ASTM D 2917.

2.3.3.5 Toluene

Toluene shall conform to ASTM D 841.

2.3.4 Silane B

Silane B for Formula VZ-108d shall be N-beta-(aminoethyl)-gamma-aminopropyltrimethoxy silane. Silane A-1120, produced by the C.K. Witco Corporation, and Silane Z-6020, produced by Dow Corning Corporation, are products of this type.

2.3.5 Propylene Oxide

Propylene oxide shall be a commercially pure product suitable for the intended use.

2.4 TESTING

2.4.1 Chromatographic Analysis

Solvents in vinyl paints and thinners shall be subject to analysis by programmed temperature gas chromatographic methods and/or spectrophotometric methods, employing the same techniques that give reproducible results on prepared control samples known to meet the specifications. If the solvent being analyzed is of the type consisting primarily of a single chemical compound or a mixture or two or more such solvents, interpretation of the test results shall take cognizance of the degree of purity of the individual solvents as commercially produced for the paint industry.

2.4.2 Vinyl Paints

Vinyl paints shall be subject to the following adhesion test. When V-766 or V-106 formulations are tested, 5 to 7 mils (dry) shall be spray applied to mild steel panels. The steel panels shall be essentially free of oil or other contaminants that may interfere with coating adhesion. The test panels shall be dry blast cleaned to a White Metal grade which shall be in compliance with SSPC SP 5. The surface shall have an angular profile of 2.0 to 2.5 mils as measured by ASTM D 4417, Method C. When V-102 or V-103 formulations are tested, they shall be spray applied over 1.5 to 2.5 mils (dry) of V-766 or V-106 known to pass this test. When VZ-108 is tested, the coating shall be mixed in its proper proportions and then spray applied to a dry film thickness of 1.5 to 2.5 mils above the blast profile. The VZ-108 shall be top coated with a V-766 known to pass this test. In all cases, the complete system shall have a total dry film thickness of 5 to 7 mils above the blast profile. After being air dried for 2 hours at room temperature, the panel shall be dried in a vertical position for 16 hours at 120 degrees F. After cooling for 1 hour, the panel shall be immersed in tap water at 85 to 90 degrees F for 48 to 72 hours. Immediately upon removal, the panel shall be dried with soft cloth and examined for adhesion as follows: With a pocket knife or other suitable instrument, two parallel cuts at least 1 inch long shall be made 1/4 to 3/8 inch apart through the paint film to the steel surface. A third cut shall be made perpendicular to and passing through the end of the first two. With the tip of the knife blade, the film shall be loosened from the panel from the third cut between the parallel cuts for a distance of 1/8 to 1/4 inch. With the panel being held horizontally, the free end of the paint film shall be grasped between the thumb and forefinger and pulled vertically in an attempt to remove the film as a strip from between the first two cuts. The strip of paint film shall be removed at a rate of approximately 1/10 inch per second and shall be maintained in a vertical position during the process of removal. The adhesion is acceptable if the strip of paint breaks when pulled or if the strip elongates a minimum of 10 percent during its removal. Paints not intended to be self-priming shall exhibit no delamination from the primer.

PART 3 EXECUTION

3.1 CLEANING AND PREPARATION OF SURFACES TO BE PAINTED

3.1.1 General Requirements

Surfaces to be painted shall be cleaned before applying paint or surface treatments. Deposits of grease or oil shall be removed in accordance with SSPC SP 1, prior to mechanical cleaning. Solvent cleaning shall be

accomplished with mineral spirits or other low toxicity solvents having a flash point above 100 degrees F. Clean cloths and clean fluids shall be used to avoid leaving a thin film of greasy residue on the surfaces being cleaned. Items not to be prepared or coated shall be protected from damage by the surface preparation methods. Machinery shall be protected against entry of blast abrasive and dust into working parts. Cleaning and painting shall be so programmed that dust or other contaminants from the cleaning process do not fall on wet, newly painted surfaces, and surfaces not intended to be painted shall be suitably protected from the effects of cleaning and painting operations. Welding of, or in the vicinity of, previously painted surfaces shall be conducted in a manner to prevent weld spatter from striking the paint and to otherwise reduce coating damage to a minimum; paint damaged by welding operations shall be restored to original condition. Surfaces to be painted that will be inaccessible after construction, erection, or installation operations are completed shall be painted before they become inaccessible.

3.1.2 Ferrous Surfaces Subject to Atmospheric Exposures

Ferrous surfaces that are to be continuously in exterior or interior atmospheric exposure and other surfaces as directed shall be cleaned by means of dry blasting to a commercial grade. Cleaning and priming shall be done in the shop unless otherwise directed or permitted. Commercial blast cleaning shall conform to the reqirements of SSPC SP 6. Welds and adjoining surfaces within a few inches (centimeters) thereof shall be cleaned of weld flux, spatter, and other harmful deposits by blasting, power impact tools, power wire brush, or such combination of these and other methods as may be necessary for complete removal of each type of deposit. The combination of cleaning methods need not include blasting when preparation of the overall surfaces is carried out by the power tool method. However, brush scrubbing and rinsing with clean water, after mechanical cleaning is completed, will be required unless the latter is carried out with thoroughness to remove all soluble alkaline deposits. Wetting of the surfaces during water-washing operations shall be limited to the weld area required to be treated, and such areas shall be dry before painting. Welds and adjacent surfaces cleaned thoroughly by blasting alone will be considered adequately prepared provided that weld spatter not dislodged by the blast stream shall be removed with impact or grinding tools. All surfaces shall be primed as soon as practicable after cleaning but prior to contamination or deterioration of the prepared surfaces. To the greatest degree possible, steel surfaces shall be cleaned (and primed) prior to lengthy outdoor storage.

3.1.3 Ferrous Surfaces Subject to Severe Exposure

Ferrous surfaces subject to extended periods of immersion or as otherwise required shall be dry blast-cleaned to SSPC SP 5. The blast profile, unless otherwise specified, shall be 1.5 to 2.5 mils as measured by ASTM D 4417, Method C. Appropriate abrasive blast media shall be used to produce the desired surface profile and to give an angular anchor tooth pattern. If recycled blast media is used, an appropriate particle size distribution shall be maintained so that the specified profile is consistently obtained. Steel shot or other abrasives that do not produce an angular profile shall not be used. Weld spatter not dislodged by blasting shall be removed with impact or grinding tools and the areas reblasted prior to painting. Surfaces shall be dry at the time of blasting. Blast cleaning to SSPC SP 5 shall be done in the field and, unless otherwise specifically authorized, after final erection. Within 8 hours after cleaning, prior to the

deposition of any detectable moisture, contaminants, or corrosion, all ferrous surfaces blast cleaned to SSPC SP 5 shall be cleaned of dust and abrasive particles by brush, vacuum cleaner, and/or blown down with clean, dry, compressed air, and given the first coat of paint. Upon written request by the Contractor, the Contracting Officer may authorize mill or shop cleaning of assembled or partially assembled components specified to receive one of the vinyl-type paint systems or Systems Nos. 6-A-Z and 21-A-Z employing the epoxy zinc-rich primer. The surfaces, if shop blasted, shall be shop coated with the first and second coats of the specified paint system except that the epoxy zinc-rich primed surfaces shall receive an extra single spray coat of the zinc primer at the time field painting is started, as specified in the paint system instructions. The shop coating shall be maintained in good condition by cleaning and touching up of areas damaged during the construction period. If pinpoint or general rusting appears, surfaces shall be reblasted and repainted at no added cost to the Government. Prior to the field application of subsequent coats, soiled areas of the shop coating shall be thoroughly cleaned and all welds or other unpainted or damaged areas shall be cleaned and coated in a manner to make them equivalent to adjacent, undamaged paint surfaces.

3.1.4 Damp and Wet Ferrous Metal Surfaces

Ferrous surfaces that are wet with condensation or standing or running water, shall be blast-cleaned to SSPC SP 5. The blast profile, unless otherwise specified, shall be 1.5 to 3.0 mils as measured by ASTM D 4417, Method C. Appropriate abrasive blast media shall be used to produce the desired surface profile and to give an angular anchor tooth pattern. Steel grit or shot media shall not be used. Weld spatter not dislodged by blasting shall be removed with impact or grinding tools and the areas reblasted prior to painting. Surfaces shall be as dry as possible at the time of blasting. Immediately after cleaning and prior to the formation of extensive corrosion products, all ferrous surfaces blast cleaned to SSPC SP 5 shall be cleaned of residual abrasive particles, and given the first coat of paint. A slightly visible rust bloom shall be permitted on surfaces to be painted.

3.1.5 Galvanized, Aluminum, Aluminum Alloy, or Copper Surfaces

Where surfaces are specified to be painted, they shall be first washed with clean mineral spirits and then pretreated with a primer conforming to SSPC Paint 27 in accordance with the following instructions. The pretreatment primer shall be mixed by adding one volume of acid component (diluent) to four volumes of resin component (base solution) slowly and with constant stirring. After mixing, the material shall be used within 8 hours. The pretreatment primer shall be spray applied at a coverage rate of 250 to 300 square feet per gallon (of resin component) to give a dry film thickness of 0.3 to 0.5 mil. Small areas may be coated by brush or swab. Care shall be exercised in spray application to avoid the deposition of dry particles on the surface. A wet spray shall be maintained at all times by additional thinning with Normal Butanol ASTM D 304. The acid component (diluent), over and above the amount prescribed above, shall not be used for thinning purposes. Surfaces shall receive the first coat of paint after at least 1 but not more than 24 hours drying of the pretreatment primer film.

3.1.6 Concrete Surfaces

New concrete surfaces, including concrete floors, shall be permitted to age for a minimum of 30 days prior to painting. Grease and oil removal shall be accomplished by solvent cleaning and/or detergent washing followed by rinsing. Loosely adherent materials such as dirt, dust, laitance, efflorescence, bleed water residues, or other foreign substances shall be removed by wire or fiber brushing, scrapers, light sandblasting, or other approved means. For interior walls and floors, sandblasting, unless otherwise specifically authorized, shall be restricted to the wet or vacuum type. Surface glaze, if present, shall be removed by light blasting or by scrubbing with a 5-percent solution of phosphoric acid. The texture of the surface after etching shall be roughly equivalent to the texture of an 80-120 grit sandpaper. If acid etching is used, the surface shall be thoroughly rinsed with clean water to remove all traces of the acid. Prior to painting, the concrete shall be dry. Adequate dryness shall be determined visually at the time of application by performing the following test. Tape 2-foot by 2-foot squares of polyethylene to the surface at random locations. The test patches shall remain in place overnight. Coatings shall only be applied if there are no traces of moisture and surfaces are dry beneath the polyethylene the following day.

3.1.7 Plaster Surfaces

At the time of painting, plaster surfaces shall be thoroughly dry and clean and free from grit, loose plaster, and surface irregularities. Cracks and holes shall be repaired with approved patching materials, properly keyed to the existing surfaces, and sand-papered smooth. Plaster shall be permitted to age a minimum of 30 days before painting.

3.2 PAINT APPLICATION

3.2.1 General

The finished coating shall be free from holidays, pinholes, bubbles, runs, drops, ridges, waves, laps, excessive or unsightly brush marks, and variations in color, texture, and gloss. Application of initial or subsequent coatings shall not commence until the Contracting Officer has verified that atmospheric conditions and the surfaces to be coated are satisfactory. Each paint coat shall be applied in a manner that will produce an even, continuous film of uniform thickness. Edges, corners, crevices, seams, joints, welds, rivets, corrosion pits, and other surface irregularities shall receive special attention to ensure that they receive an adequate thickness of paint. Spray equipment shall be equipped with traps and separators and where appropriate, mechanical agitators, pressure gauges, pressure regulators, and screens or filters. Air caps, nozzles, and needles shall be as recommended by the spray equipment manufacturer for the material being applied. Airless-type spray equipment may be used only on broad, flat, or otherwise simply configured surfaces, except that it may be employed for general painting if the spray gun is equipped with dual or adjustable tips of proper types and orifice sizes. Airless-type equipment shall not be used for the application of vinyl paints.

3.2.2 Mixing and Thinning

Paints shall be thoroughly mixed, strained where necessary, and kept at a uniform composition and consistency during application. Paste or dry-powder pigments specified to be added at the time of use shall, with the aid of powered stirrers, be incorporated into the vehicle or base paint in a manner

that will produce a smooth, homogeneous mixture free of lumps and dry particles. Where necessary to suit conditions of the surface temperature, weather, and method of application, the paint may be thinned immediately prior to use. Thinning shall generally be limited to the addition of not more than 1 pint per gallon of the proper thinner; this general limitation shall not apply when more specific thinning instructions are provided. Paint that has been stored at low temperature, shall be brought up to at least 70 degrees F before being mixed and thinned, and its temperature in the spray tank or other working container shall not fall below 60 degrees F during the application. Paint that has deteriorated in any manner to a degree that it cannot be restored to essentially its original condition by customary field-mixing methods shall not be used and shall be removed from the project site. Paint and thinner that is more than 1 year old shall be resampled and resubmitted for testing to determine its suitability for application.

3.2.3 Atmospheric and Surface Conditions

Paint shall be applied only to surfaces that are above the dew point temperature and that are completely free of moisture as determined by sight and touch. Paint shall not be applied to surfaces upon which there is detectable frost or ice. Except as otherwise specified, the temperature of the surfaces to be painted and of air in contact therewith shall be not less than 45 degrees F during paint application nor shall paint be applied if the surfaces can be expected to drop to 32 degrees F or lower before the film has dried to a reasonably firm condition. During periods of inclement weather, painting may be continued by enclosing the surfaces and applying artificial heat, provided the minimum temperatures and surface dryness requirements prescribed previously are maintained. Paint shall not be applied to surfaces heated by direct sunlight or other sources to temperatures that will cause detrimental blistering, pinholing, or porosity of the film.

3.2.4 Time Between Surface Preparation and Painting

Surfaces that have been cleaned and/or otherwise prepared for painting shall be primed as soon as practicable after such preparation has been completed but, in any event, prior to any deterioration of the prepared surface.

3.2.5 Method of Paint Application

Unless otherwise specified, paint shall be applied by brush or spray to ferrous and nonferrous metal surfaces. Special attention shall be directed toward ensuring adequate coverage of edges, corners, crevices, pits, rivets, bolts, welds, and similar surface irregularities. Other methods of application to metal surfaces shall be subject to the specific approval of the Contracting Officer. Paint on plaster, concrete, or other nonmetallic surfaces shall be applied by brush, roller, and/or spray.

3.2.6 Coverage and Film Thickness

Film thickness or spreading rates shall be as specified hereinafter. Where no spreading rate is specified, the paint shall be applied at a rate normal for the type of material being used. In any event, the combined coats of a specified paint system shall completely hide base surface and the finish coats shall completely hide undercoats of dissimilar color.

3.2.6.1 Measurement on Ferrous Metal

Where dry film thickness requirements are specified for coatings on ferrous surfaces, measurements shall be made with a gage qualified in accordance with paragraph Coating Thickness Gage Qualification. They shall be calibrated and used in accordance with ASTM D 1186. They shall be calibrated using plastic shims with metal practically identical in composition and surface preparation to that being coated, and of substantially the same thickness (except that for measurements on metal thicker than 1/4 inch, the instrument may be calibrated on metal with a minimum thickness of 1/4 inch). Frequency of measurements shall be as recommended for field measurements by ASTM D 1186 and reported as the mean for each spot determination. The instruments shall be calibrated or calibration verified prior to, during, and after each use.

3.2.6.2 Measurements on Nonferrous Metal

Where dry film thickness requirements are specified for coatings applied to nonferrous metal surfaces, measurements shall be madeusing a gage qualified in accordance with paragraph Coating Thickness Gage Qualification. They shall be calibrated and used in accordance with ASTM D 1400. Calibration shall be on metal identical in composition and surface preparation to that being coated and of substantially the same thickness (except that for measurements on metal thicker than 1/4 inch, the instrument may be calibrated on metal with a minimum thickness of 1/4 inch). Frequency of measurements shall be as recommended for field measurements by ASTM D 1400 and reported as the mean for each spot determination. The instruments shall be calibrated or calibration verified prior to, during, and after each use.

3.2.7 Progress of Painting Work

Where field painting on any type of surface has commenced, the complete painting operation, including priming and finishing coats, on that portion of the work shall be completed as soon as practicable, without prolonged delays. Sufficient time shall elapse between successive coats to permit them to dry properly for recoating, and this period shall be modified as necessary to suit adverse weather conditions. Paint shall be considered dry for recoating when it feels firm, does not deform or feel sticky under moderate pressure of the finger, and the application of another coat of paint does not cause film irregularities such as lifting or loss of adhesion of the undercoat. All coats of all painted surfaces shall be unscarred and completely integral at the time of application of succeeding coats. At the time of application of each successive coat, undercoats shall be cleaned of dust, grease, overspray, or foreign matter by means of airblast, solvent cleaning, or other suitable means. Cement and mortar deposits on painted steel surfaces, not satisfactorily removed by ordinary cleaning methods, shall be brush-off blast cleaned and completely repainted as required. Undercoats of high gloss shall, if necessary for establishment of good adhesion, be scuff sanded, solvent wiped, or otherwise treated prior to application of a succeeding coat. Field coats on metal shall be applied after erection except as otherwise specified and except for surfaces to be painted that will become inaccessible after erection.

3.2.8 Contacting Surfaces

When riveted or ordinary bolted contact is to exist between surfaces of ferrous or other metal parts of substantially similar chemical composition,

such surfaces will not be required to be painted, but any resulting crevices shall subsequently be filled or sealed with paint. Contacting metal surfaces formed by high-strength bolts in friction-type connections shall not be painted. Where a nonmetal surface is to be in riveted or bolted contact with a metal surface, the contacting surfaces of the metal shall be cleaned and given three coats of the specified primer. Unless otherwise specified, corrosion-resisting metal surfaces, including cladding therewith, shall not be painted.

3.2.9 Drying Time Prior to Immersion

Minimum drying periods after final coat prior to immersion shall be: epoxy systems at least 5 days, vinyl-type paint systems at least 3 days, and cold-applied coal tar systems at least 7 days. Minimum drying periods shall be increased twofold if the drying temperature is below 65 degrees F and/or if the immersion exposure involves considerable abrasion.

3.2.10 Protection of Painted Surfaces

Where shelter and/or heat are provided for painted surfaces during inclement weather, such protective measures shall be maintained until the paint film has dried and discontinuance of the measures is authorized. Items that have been painted shall not be handled, worked on, or otherwise disturbed until the paint coat is fully dry and hard. All metalwork coated in the shop or field prior to final erection shall be stored out of contact with the ground in a manner and location that will minimize the formation of water-holding pockets; soiling, contamination, and deterioration of the paint film, and damaged areas of paint on such metalwork shall be cleaned and touched up without delay. The first field coat of paint shall be applied within a reasonable period of time after the shop coat and in any event before weathering of the shop coat becomes extensive.

3.2.11 Vinyl Paints

3.2.11.1 General

Vinyl paints shall be spray applied, except that areas inaccessible to spraying shall be brushed. All of the vinyl paints require thinning for spray application except the zinc-rich vinyl paint (Formula VZ 108d) which will normally require thinning only under certain weather conditions. Thinners for vinyl paints shall be as follows:

APPROXIMATE AMBIENT AIR TEMPERATURE (Degrees F)	
Below 50	MEK
50 - 70	MIBK
Above 70	MIAK

The amount of thinner shall be varied to provide a wet spray and avoid deposition of particles that are semidry when they strike the surface. Vinyl paints shall not be applied when the temperature of the ambient air and receiving surfaces is less than 35 degrees F nor when the receiving surfaces are higher than 125 degrees F. Each spray coat of vinyl paint shall consist of a preliminary extra spray pass on edges, corners, interior angles, pits, seams, crevices, junctions of joining members, rivets, weld lines, and similar surface irregularities followed by an overall double

spray coat. A double spray coat of vinyl-type paint shall consist of applying paint to a working area of not less than several hundred square feet (meters) in a single, half-lapped pass, followed after drying to at least a near tack-free condition by another spray pass applied at the same coverage rate and where practicable at right angles to the first. Rivets, bolts, and similar surface projections shall receive sprayed paint from every direction to ensure complete coverage of all faces. Pits, cracks, and crevices shall be filled with paint insofar as practicable, but in any event, all pit surfaces shall be thoroughly covered and all cracks and crevices shall be sealed off against the entrance of moisture. Fluid and atomization pressures shall be kept as low as practicable consistent with good spraying results. Unless otherwise specified, not more than 2.0 mils, average dry film thickness, of vinyl paint shall be applied per double spray coat. Except where otherwise indicated, an undercoat of the vinyl-type paint may receive the next coat any time after the undercoat is tack-free and firm to the touch, provided that no speedup or delay in the recoating schedule shall cause film defects such as sags, runs, air bubbles, air craters, or poor intercoat adhesion. Neither the prime coat nor any other coat shall be walked upon or be subjected to any other abrading action until it has hardened sufficiently to resist mechanical damage.

3.2.11.2 Vinyl Zinc-Rich Primer

Primer shall be field mixed combining components A, B, and C. Mixing shall be in accordance with label instructions. After mixing, the paint shall be kept covered at all times to avoid contamination and shall be applied within 8 days after it is mixed. When the ambient and/or steel temperature is below about 80 degrees F, the paint will not normally require thinning; however, the paint shall at all times contain sufficient volatiles (thinners) to permit it to be satisfactorily atomized and to provide a wet spray and to avoid deposition of particles that are semidry when they reach the surface. The paint shall be stirred continuously during application at a rate that will prevent the zinc dust from settling. When spraying is resumed after any interruption of longer than 15 minutes, the entire length of the material hose shall be whipped vigorously until any settled zinc is redispersed. Long periods of permitting the paint to remain stagnant in the hose shall be avoided by emptying the hoses whenever the painting operation is to be suspended for more than 1 hour. The material (paint) hoses shall be kept as short as practicable, preferably not more than 50 feet in length. Equipment used for spraying this zinc primer shall not be used for spraying other vinyl-type paints without first being thoroughly cleaned, since many of the other paints will not tolerate zinc contamination; no type of hot spray shall be used. An average dry film thickness of up to 2.5 mils may be applied in one double-spray coat. Unless specifically authorized, not more than 8 days shall elapse after application of a VZ-108d zinc-rich coat before it receives a succeeding coat.

3.2.11.3 Vinyl Paints

Vinyl Paints (Formulas V-102e, V-103c, V-106d, and V-766e) are ready-mixed paints designed to be spray applied over a wide range of ambient temperatures by field thinning with the proper type and amount of thinner. For spray application, they shall be thinned as necessary up to approximately 25 percent (1 quart per gallon of base paint) with the appropriate thinner; when ambient and steel temperatures are above normal, up to 40-percent thinning may be necessary for satisfactory application.

3.2.12 Coal Tar-Epoxy (Black) Paint (Formula C-200a)

3.2.12.1 Mixing

Component B shall be added to previously stirred Component A and thoroughly mixed together with a heavy-duty mechanical stirrer just prior to use. The use of not more than 1 pint of xylene thinner per 1 gallon of paint will be permitted to improve application properties and extend pot life. The pot life of the mixed paint, extended by permissible thinning, may vary from 2 hours in very warm weather to 5 or more hours in cool weather. Pot life in warm weather may be extended by precooling the components prior to mixing; cooling the mixed material; and/or by slow, continuous stirring during the application period. The mixed material shall be applied before unreasonable increases in viscosity take place.

3.2.12.2 Application

Spray guns shall be of the conventional type equipped with a fluid tip of approximately 0.09 inch in diameter and external atomization, seven-hole air cap. Material shall be supplied to the spray gun from a bottom withdrawal pot or by means of a fluid pump; hose shall be 1/2 inch in diameter. Atomization air pressure shall not be less than 80 psi. High-pressure airless spray equipment may be used only on broad, simply configured surfaces. Brush application shall be with a stiff-bristled tool heavily laden with material and wielded in a manner to spread the coating smoothly and quickly without excessive brushing. The coverage rate of the material is approximately 110 square feet per gallon per coat to obtain 20 mils (dry thickness) in a two-coat system. The paint shall flow together and provide a coherent, pinhole-free film. The direction of the spray passes (or finish strokes if brushed) of the second coat shall be at right angles to those of the first where practicable.

3.2.12.3 Subsequent Coats

Except at the high temperatures discussed later in this paragraph, the drying time between coal tar-epoxy coats shall not be more than 72 hours, and application of a subsequent coat as soon as the undercoat is reasonably firm is strongly encouraged. Where the temperature for substrate or coating surfaces during application or curing exceeds or can be expected to exceed 125 degrees F as the result of direct exposure to sunlight, the surfaces shall be shaded by overhead cover or the interval between coats shall be reduced as may be found necessary to avoid poor intercoat adhesion. Here, poor intercoat adhesion is defined as the inability of two or more dried coats of coal tar-epoxy paint to resist delamination when tested aggressively with a sharp knife. Under the most extreme conditions involving high ambient temperatures and sun-exposed surfaces, the drying time between coats shall not exceed 10 hours, and the reduction of this interval to a few hours or less is strongly encouraged. Where the curing time of a coal tar-epoxy undercoat exceeds 72 hours of curing at normal temperatures, 10 hours at extreme conditions, or where the undercoat develops a heavy blush, it shall be given one of the following treatments before the subsequent coat is applied:

a. Etch the coating surface lightly by brush-off blasting, using fine sand, low air pressure, and a nozzle-to-surface distance of approximately 3 feet.

b. Remove the blush and/or soften the surface of the coating by wiping it with cloths dampened with 1-methyl-2-pyrrolidone. The solvents may be applied to the surface by fog spraying followed by wiping, but any puddles of solvent must be mopped up immediately after they form. The subsequent coat shall be applied in not less than 15 minutes or more than 3 hours after the solvent treatment.

3.2.12.4 Ambient Temperature

Coal tar-epoxy paint shall not be applied when the receiving surface or the ambient air is below 50 degrees F nor unless it can be reasonably anticipated that the average ambient temperature will be 50 degrees F or higher for the 5-day period subsequent to the application of any coat.

3.2.12.5 Safety

In addition to the safety provisions in paragraph SAFETY AND HEALTH PROVISIONS, other workmen as well as painters shall avoid inhaling atomized particles of coal tar-epoxy paint and contact of the paint with the skin.

3.3 PAINT SYSTEMS APPLICATION

The required paint systems and the surfaces to which they shall be applied are shown in this paragraph, and/or in the drawings. Supplementary information follows.

3.3.1 Fabricated and Assembled Items

Items that have been fabricated and/or assembled into essentially their final form and that are customarily cleaned and painted in accordance with the manufacturer's standard practice will be exempted from equivalent surface preparation and painting requirements described herein, provided that:

a. Surfaces primed (only) in accordance with such standard practices are compatible with specified field-applied finish coats.

b. Surfaces that have been primed and finish painted in accordance with the manufacturer's standard practice are of acceptable color and are capable of being satisfactorily touched up in the field.

c. Items expressly designated herein to be cleaned and painted in a specified manner are not coated in accordance with the manufacturer's standard practice if different from that specified herein.

3.3.2 Surface Preparation

The method of surface preparation and pretreatment shown in the tabulation of paint systems is for identification purposes only. Cleaning and pretreatment of surfaces prior to painting shall be accomplished in accordance with detailed requirements previously described.

3.3.3 System No. 1

This epoxy paint system shall have been tested and passed all the test requirements of SSPC PS 26.00. Application shall be by spray, brush or roller in accordance with the manufacturer's written instructions. Dry film

thickness per coat shall be within plus or minus 20 percent of that recommended by the manufacturer. Application of the system in less than two coats shall not be accepted. The epoxy coating shall be mixed and thinned in accordance with the manufacturers written directions. Mixed coating material that has exceeded the manufacturers pot life shall not be applied. Materials that have been mixed for more than 8 hours or that have thickened appreciably shall not be applied. The manufacturer's recommendations for minimum and maximum dry time between coats shall be met.

<TAI OPT=PAINT - P-38 ALUMINUM FINISH>3.3.4 System No. 2

The first coat shall be brush or spray applied in the shop or field as indicated at a maximum spreading rate of 500 square feet per gallon and touched up in the field as necessary to maintain its integrity at all times. The second or third coats of the system shall be applied in the field at a maximum spreading rate of 450 square feet per gallon. Prior to applying field coats, all field welds, other bare metal, and damaged areas of the shop-primed surfaces shall be cleaned and primed as previously specified except that application shall be by brush.

<TAI OPT=PAINT - VINYL GRAY AND WHITE>3.3.5 System No. 3

Paint shall be spray applied to an average dry film thickness of a minimum of 6.0 mils for the completed system and the thickness at any point shall not be less than 5.0 mils. Approximately 3.0 mils of the total dry film thickness shall be built up with Formula V-766e paint. The specified film thickness shall be attained in any event, and any additional coats needed to attain specified thickness shall be applied at no additional cost to the Government. Attaining the specified film thickness in fewer than the prescribed number of coats or spray passes will be acceptable provided the heavier applications do not cause an increase in pinholes, bubbles, blisters, or voids in the dried film and also provided that not more than 2.0 mils (dry film thickness) per double spray coat nor more than 1.0 mil per single spray pass shall be applied at one time.

<TAI OPT=PAINT - VINYL ALUMINUM>3.3.6 System No. 3-A-Z

Paint shall be spray applied to an average dry film thickness of a minimum of 6.5 mils for the completed system, and the thickness at any point shall not be less than 5.5 mils. The dry film thickness of the zinc-rich coat shall be approximately 2.5 mils. Specified film thickness, including the prescribed total, shall be attained in any event, and any extra coats needed to attain specified thickness shall be applied at no additional cost to the Government. Attaining of the specified film thickness in fewer than the prescribed number of coats or spray passes will be acceptable provided heavier applications do not cause an increase in pinholes, bubbles, blisters, or voids in the dried film and also provided that not more than 2.0 mils (dry film thickness) per double spray coat nor more than 1.0 mil per single spray pass of nonzinc paint shall be applied at one time.

3.3.7 System No. 4

Paint shall be spray applied to an average dry film thickness of a minimum of 7.5 mils for the completed system, and the thickness at any point shall not be less than 6.0 mils. The specified total film thickness shall be attained in any event, and additional coats needed to attain the specified thickness shall be applied at no additional cost to the Government.

Attaining the specified film thickness in fewer than the prescribed number of coats or spray passes will be acceptable provided heavier applications do not cause an increase in pinholes, bubbles, blisters, or voids in the dried film and also provided that no more than 2.0 mils (dry film thickness) per double spray coat nor more than 1.0 mil per single spray pass of nonzinc paint shall be applied at one time.

<TAI OPT=PAINT - VINYL BLACK>3.3.8 System No. 5-A-Z

Paint shall be spray applied to an average dry film thickness of a minimum of 6.5 mils for the completed system and the thickness at any point shall not be less than 5.0 mils. The approximate dry film thickness after application of the first and second double spray coats shall be 2.5 and 4.0 mils, respectively. The specified film thickness shall be attained in any event, and any additional coats needed to attain specified thickness shall be applied at no additional cost to the Government. Attaining the specified film thickness in fewer than the prescribed number of coats or spray passes will be acceptable provided heavier applications do not cause an increase in pinholes, bubbles, blisters, or voids in the dried film and also provided that not more than 2.0 mils (dry film thickness) per double spray coat nor more than 1.0 mils per single spray pass of nonzinc paint shall be applied at one time.

<TAI OPT=PAINT - VINYL RED>3.3.9 System No. 5-C-Z

Paint shall be spray applied to an average dry film thickness of a minimum of 7.0 mils for the completed system, and the thickness at any point shall not be less than 5.5 mils. The dry film thickness of the zinc-rich coat shall be approximately 2.5 mils. Specified film thickness, including the prescribed total, shall be attained in any event, and any extra coats needed to attain specified thickness shall be applied at no additional cost to the Government. Attaining of the specified film thickness in fewer than the prescribed number of coats or spray passes will be acceptable provided heavier applications do not cause an increase in pinholes, bubbles, blisters, or voids in the dried film and also provided that not more than 2.0 mils (dry film thickness) per double spray coat nor more than 1.0 mil per single spray pass of nonzinc paint shall be applied at one time.

3.3.10 System No. 5-D

Paint shall be spray applied to an average dry film thickness of a minimum of 7.5 mils for the completed system, and the thickness at any point shall not be less than 6.0 mils. The specified total film thickness shall be attained in any event, and any additional coats needed to attain specified thickness shall be applied at no additional cost to the Government. Attaining the specified film thickness in fewer than the prescribed number of coats or spray passes will be acceptable provided heavier applications do not cause an increase in pinholes, bubbles, blisters, or voids in the dried film and also provided that not more than 2.0 mils (dry film thickness) per double spray coat nor more than 1.0 mils per single spray pass of nonzinc paint shall be applied at one time.

<TAI OPT=PAINT - VINYL GRAY AND WHITE>3.3.11 System No. 5-E-Z

Paint shall be spray applied to an average dry film thickness of a minimum of 7.0 mils for the completed system, and the thickness at any point shall not be less than 5.5 mils. The dry film thickness of the zinc-rich primer

shall be approximately 2.5 mils. The specified film thickness shall be attained in any event, and any extra coats needed to attain the specified thickness shall be applied at no additional cost to the Government. Attaining the specified film thickness by applying fewer than the prescribed number of coats or spray passes will be acceptable provided heavier applications do not cause an increase in pinholes, bubbles, blisters, or voids in the dried film and also provided that not more than 2.0 mils (dry film thickness) per double spray coat nor more than 1.0 mil per single spray pass of nonzinc paint shall be applied at one time.

3.3.12 System No. 6

Paint shall be spray or brush applied with a minimum of two coats to provide a minimum total thickness at any point of 16 mils. The specified film thickness shall be attained in any event, and any additional (beyond two) coats needed to attain specified thickness shall be applied at no additional cost to the Government.

<TAI OPT=PAINT - EPOXY COAL TAR>3.3.13 System No. 6-A-Z

Epoxy zinc-rich primer 19B shall be applied in accordance with the manufacturer's directions in two single, half-lapped spray coats to an average dry film thickness of a minimum of 3.0 mils. The thickness at any point shall not be less than 2.5 mils or greater 8 mils for the primer. After a minimum drying period of 6 hours and no more than 96 hours, at least two coats of coal tar epoxy paint shall be applied to provide a minimum thickness at any point of 16 mils for the completed system. If the epoxy zinc-rich paint has been applied in the shop or otherwise has been permitted to cure for longer than 96 hours, it shall be abraded and recoated with an additional thin tack coat of the zinc-rich paint, which in turn shall be overcoated within 96 hours with the first coat of coal tar-epoxy paint. The specified film thicknesses shall be attained in any event, and any additional coats needed to attain specified thickness shall be applied at no additional cost to the Government.

3.3.14 System No. 7

A special primer shall be used under the coal tar-base paint only if/as recommended by the coating manufacturer. The materials shall be heavily applied by brush or with heavy-duty spray equipment at a coverage rate that will give a minimum total dry film thickness of 20 mils at any point for the completed system. The paint shall not be thinned unless recommended by the manufacturer. If brushed, the final strokes shall be at right angles to those of the preceding coat. Application and drying time between coats shall be as recommended by the coating manufacturer.

3.3.15 System No. 8

The coating shall be mixed and applied in accordance with the manufacturer's written instructions. The coating shall be applied in one or more coats to achieve an average dry film thickness of a minimum of 12 mils. Minimum thickness at any point shall be not less than 9 mils. Roller application is preferred. Application to vertical surfaces by airless spray may be performed provided all condensed water droplets are removed by wiping with a terry cloth towel immediately prior to spray application. Application to horizontal surfaces or surfaces otherwise covered by standing or running water shall be by roller. Brush application shall be limited to inside

corners, bolt heads and other surface irregularities that are difficult to coat by roller. Subsequent coats shall be applied in the shortest recommended recoat interval. The minimum manufacturer recommended ambient and surface temperatures shall be maintained during application and curing of the coating.

3.3.16 System No. 9

The first coat shall be spray or brush applied in the shop at a maximum spreading rate of 500 square feet per gallon. The shop coat shall be touched up in the field as necessary to maintain its integrity at all times. The second coat shall be field applied at a minimum spreading rate of 450 square feet per gallon. Where directed, structural steel and miscellaneous ferrous surfaces in painted spaces shall, in lieu of the specified second primer coat, be finish painted to match adjacent painted surfaces.

<TAI OPT=PAINT - SSPC PAINT 20 ZINC PRIMER>3.3.17 System No. 10

Paint shall be applied according to manufacturers recommendations to a minimum average dry film thickness of 5 mils and the thickness at any point shall not be less than 4.0 mils. The specified film thickness may be obtained in a single coat provided this is allowed by manufacturers recommendations and provided this does not result in improper cure or result in the development of mud cracking or other film defects.

<TAI OPT=PAINT - SSPC PAINT 20 ZINC PRIMER>3.3.18 System No. 12

Galvanized surfaces shall be washed to expose damaged areas. Mars and breaks in the galvanized coating shall be hand or power tool cleaned to remove all corroded substrate. The damaged areas shall be touched up with two coats of SSPC Paint 20, Type II.

<TAI OPT=PAINT - P-38 ALUMINUM FINISH>3.3.19 System No. 13

Apply P-38 coats at a maximum spreading rate of 450 square feet per gallon.

3.3.20 System No. 14

All products shall be applied in compliance with manufacturer's written instructions.

3.3.21 System No. 15

This system shall consist of an epoxy primer and polyurethane topcoat passing all the test requirements of the Commercial Item Description. Application shall be by spray, brush or roller. Dry film thickness of each coat shall be within plus or minus 20 percent of that recommended by the manufacturer for the qualification testing. The epoxy and urethane coatings shall be mixed and thinned in accordance with the manufacturers written directions. Mixed coating material that has exceeded the manufacturers pot life shall not be applied. Materials that have been mixed for more than 8 hours or that have thickened appreciably shall not be applied. The manufacturers recommendations for minimum and maximum dry time between coats shall be met.

3.3.22 System No. 16

The first coat shall be brush or spray applied in the shop or field as indicated at a maximum spreading rate of 500 square feet per gallon and touched up in the field as necessary to maintain its integrity at all times. The second and third coats shall be applied in the field at a maximum spreading rate of 450 square feet per gallon. The finish color shall be as indicated. No paint shall be applied to running surfaces of bearings and machinery. Pipe-threading and cutting compounds shall be removed by solvent washing prior to application of paint to pipe surfaces.

3.3.23 System No. 17

Except as otherwise required, metal ductwork, conduit, pipe, radiators, grilles, louvers, pull boxes, and exposed surfaces of miscellaneous embedded metalwork shall be finish painted the same as adjacent ceilings or walls provided that:

a. The coat of MPI 50 may be omitted on metal surfaces primed with a shop or field coat of metal priming paint.

b. On bare ferrous surfaces the coat of MPI 50 shall be replaced with a coat of either SSPC Paint 25 or a coat of MPI 46.

c. Galvanized and other nonferrous metal surfaces shall be solvent cleaned in accordance with SSPC SP 1 and pretreated with SSPC Paint 27 in place of the MPI 50 coat.

3.3.24 System No. 18

Oil based alkyd paints shall be thinned using only odorless mineral spirits (ASTM D 235). Except as otherwise required, metal ductwork, conduit, pipe, radiators, grilles, louvers, pull boxes, and exposed surfaces of miscellaneous embedded metalwork shall be finished the same as adjacent ceilings or walls provided that:

a. The coat of MPI 46 or MPI 50 may be omitted on metal surfaces primed with a shop or field coat of metal priming paint.

b. All bare ferrous surfaces shall be primed with either MPI 46 or SSPC Paint 25.

c. Galvanized and other nonferrous metal surfaces shall be cleaned in accordance with SSPC SP 1 and pretreated with SSPC Paint 27 in place of MPI 46 or MPI 50.

3.3.25 System No. 21

Paint shall be applied with a minimum of two single coats to produce an average dry film thickness totaling 6.0 mils. When applying MIL-DTL-24441C SUP 1, the type of thinner, amount of thinning, and required induction time shall be as recommended by the manufacturer. The drying time between coats shall not be less than 8 hours nor more than 96 hours.

<TAI OPT=PAINT - EPOXY COLORS>3.3.26 System No. 21-A-Z

The epoxy zinc-rich paint 19B shall be applied in two singles half-lapped spray coats to an average dry film thickness of a minimum of 4.0 mils, and a thickness at any point of not less than 2.5 mils or greater than 8.0 mils.

After a drying period of not less than 6 hours nor more than 96 hours, at least two coats of epoxy polyamide paint shall be applied to produce an average dry film thickness totaling 12 mils. If the epoxy zinc-rich paint has been applied in the shop or otherwise has been permitted to cure for longer than 96 hours, it shall be abraded and recoated with an additional thin tack coat of the zinc-rich paint, which in turn shall be overcoated within 96 hours with the first coat of the epoxy polyamide paint. When applying MIL-DTL-24441C SUP 1, the type of thinner, amount of thinning, and required induction time shall be as recommended by the manufacturer. The drying time between non-zinc coats shall not be less than 12 hours nor more than 96 hours.

3.3.27 System No. 22

The floor coating shall be applied according to the manufacturer's instructions. It shall be a 4 coat system having a minimum total dry film thickness at any point of not less than 9 mils.

3.3.28 Protection of Nonpainted Items and Cleanup

Walls, equipment, fixtures and all other items in the vicinity of the surfaces being painted shall be maintained free from damage by paint or painting activities. Paint spillage and painting activity damage shall be promptly repaired.

3.4 INSPECTION

The Contractor shall inspect, document, and report all work phases and operations on a daily basis. As a minimum the daily report shall contain the following:

a. Inspections performed, including the area of the structure involved and the results of the inspection.

b. Surface preparation operations performed, including the area of the structure involved, the mode of preparation, the kinds of solvent, abrasive, or power tools employed, and whether contract requirements were met.

c. Thinning operations performed, including thinners used, batch numbers, and thinner/paint volume ratios.

d. Application operations performed, including the area of the structure involved, mode of application employed, ambient temperature, substrate temperature, dew point, relative humidity, type of paint with batch numbers, elapsed time between surface preparation and application, elapsed time for recoat, condition of underlying coat, number of coats applied, and if specified, measured dry film thickness or spreading rate of each new coating.

3.5 PAINTING SCHEDULES

SYSTEM NO. 1

Items or surfaces to be coated: Interior of Water Tanks

SURFACE

PREPARATION	PAINT SYSTEM
Near -White blast cleaning	SSPC PS 26.00 Type I

SYSTEM NO. 15

Items or surfaces to be coated: Exterior of Water Tanks

SURFACE PREPARATION	1st COAT	2nd COAT
Alternate 2 Commercial blast cleaning	Epoxy Primer CID A-A-3132	Urethane Topcoat CID A-A-3132

-- End of Section --

SECTION 13281A

LEAD HAZARD CONTROL ACTIVITIES
03/02
AMENDMENT #0002 #0005

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z9.2	(2001) Fundamentals Governing the Design and Operation of Local Exhaust Ventilation Systems

ASTM INTERNATIONAL (ASTM)

ASTM E 1553	(1993) Collection of Airborne Particulate Lead During Abatement and Construction Activities
ASTM E 1613	(1999) Determination of Lead by Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES), Flame Atomic Absorption Spectrometry (FAAS), or Graphite Furnace Atomic Absorption Spectometry (GFAAS) Techniques
ASTM E 1727	(1999) Field Collection of Soil Samples for Lead Determination by Atomic Spectrometry Techniques
ASTM E 1729	(1999) Field Collection of Dried Paint Samples for Lead Determination by Atomic Spectrometry Techniques
ASTM E 1792	(2002) Wipe Sampling Materials for Lead in Surface Dust
ASTM E 1795	(2000) Non-Reinforced Liquid Coating Encapsulation Products for Leaded Paint in Buildings
ASTM E 1796	(1997) Selection and Use of Liquid Coating Encapsulation Products for Leaded Paint in Buildings
ASTM E 1797	(2000) Reinforced Liquid Coating Encapsulation Products for Leaded Paint in Buildings

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 701	(1999) Methods of Fire Tests for Flame-Propagation of Textiles and Films

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)

NIOSH 84-100	(1984; 3rd Ed, R: 1994) NIOSH Manual of Analytical Methods

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(1996) U.S. Army Corps of Engineers Safety and Health Requirements Manual

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT (HUD)

HUD 6780	(1995; Errata Aug 1996;Rev Ch. 7 - 1997) Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

24 CFR 35	Lead-Based Paint Poisioning Prevention in Certain Residential Structures
29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1926	Safety and Health Regulations for Construction
40 CFR 745	Lead-Based Paint Poisoning Prevention in Certain Residential Structures

UNDERWRITERS LABORATORIES (UL)

UL 586	(1996; Rev thru Apr 2000) High-Efficiency, Particulate, Air Filter Units

1.2 DEFINITIONS

a. Lead Hazard Control Activity - Any construction work where a worker may be occupationally exposed to lead and procedures have to be followed to assure that: 1). Lead inside the lead hazard control area is cleaned up to appropriate levels and 2). Lead dust does not disperse outside the lead hazard control area at unacceptable levels.

b. Public/Commercial Building - Buildings on real property, including residential real property, generally accessible to the public except target housing, child occupied facilities and industrial buildings. Examples include offices, stores/shopping centers, churches, schools, barracks, hospitals, museums, airports, hotels, convention centers.

c. Industrial Building - Any building used for industrial purposes where normal operations inside the building may produce lead aerosol that will settle out on inside surfaces.

d. Target Housing - Residential real property which is housing

constructed prior to 1978, except housing for the elderly or persons with disabilities (unless any one or more children age 6 years or under resides or is expected to reside in such housing for the elderly or persons with disabilities) or any 0 bedroom dwelling.

e. Child-occupied Facility - Real property which is a building or portion of a building constructed prior to 1978 visited regularly by the same child, 6 years of age or under, on at least two different days, provided that each day's visit lasts at least 6 hours, and the combined annual visits last at least 60 hours. Child-occupied facilities include but are not limited to, day-care centers, preschools and kindergarten classrooms.

f. Residential Real Property - Real property on which there is situated one or more residential dwellings used or occupied, or intended to be used or occupied , in whole or in part, as the home or residence of one or more persons.

1.3 DESCRIPTION OF WORK

The lead hazard and control work covered by this section includes work as indicated on the drawings, removal of lead based coatings described in Section 09965A PAINTING HYDRAULIC STRUCTURES, and the precautions specified in this section for the protection of workers, building occupants and the environments. Work of this project consists of replacing existing cast iron pipe and fittings that has lead sealed joint with specified piping system. Properly contained lead joint component assemblies shall be **[AM0002]** removed from government controlled land and properly disposed of in a hazardous waste facility in accordance with all Federal, State, and local requirements. Contractor is responsible for preparation of a comprehensive and complete Lead **[AM#0005] Abatement and** Hazard Control Plan and Accident Prevention Plan in compliance with this section and federal, state, and local requirements for the demolition and abatement of the lead joints and **[AM #0005] LBP from the** hydraulic structure to be repainted. The use of enclosures is not expected for the pile lead joints, however, should the pipe and fittings be damaged appropriate enclosures and personnel protective measures shall be provided. Soil surrounding the cast iron piping system shall be tested and lead contaminated soil shall be abated accordingly. Contractor is responsible for determining all estimated quantities prior to commencement of abatement **[AM#5] for the Hueco Tank (Work Area E). The Limited Lead Sampling Report dated May 12, 2003 by SafeNet Environmental Services, LLC is included after this specification**.

[AM#0005] A list of other structures to be demolished is attached with this section. The contractor shall review work required on the attached list, obtain confirmation test results (for the painted concrete and the painted wood from the Government), submit necesary work plans (also notifcations, licenses and permits) for review and approval, prior to disturb demolition structures. The Contractor shall demolish concrete, wood, and metal structures. The Lead Abatement and Hazard Control (LAHC) Plan shall include the abatement and demolition of the attached list. The LAHC Plan shall address protection of workers, adjacent occupants, and the environment. Prior to demolition of structures, the Contractor shall complete work as required in other specification sections, and segregate metal, plastic, glass for recycling (referecne recycling in SECTION 01355 ENVIRONEMNTAL PROTECTION). All painted metal components or pipes shall not be disposed of as LBP debris, they shall be segregated, packaged, and shipped to a scrape metal facility and ensure no reuse of such items by the

low income community.

The Contractor shall assume demolition debris from painted concrete structures as CLASS I WASTE until verification TCLP-lead test result is provided by the Government to proof it otherwise. CLASS I WASTE is characterized by the TCLP-lead sample analytical result that is equal to or greater than 1.5 mg/liter. The CLASS I WASTE shall be disposed of in a state permitted TYPE I municipal landfill that has a special waste trench or in an industrial waste landfill. CLASS I WASTE shall require approval by TCEQ prior to disposal.

The Contractor shall assume the interior and exterior painted wood structures as hazardous waste. The wood components shall be abated as components in their entirety, and the method of handling and packaging shall render no release of lead dust to the workers, adjacent occupants, and environment. The TCLP-lead sample analytical result, equal to or greater than 5.0 mg/liter is classified as HAZARDOUS WASTE. Hazardous waste shall be disposed of at a TSD facility that has a current TCEQ permit to receive hazardous. Hazardous waste shall be manifested for disposal. Containment, packaging, transportation, manifest, disposal of hazardous waste shall comply with applicable Federal and state regulations. The Contractor shall provide to the COR a written statement from the Treatment, Storage, & Disposal (TSD) Facility that it is permitted to receive the hazardous waste stream. Contractor shall not disturb structure until approval of submittals.

The Contractor is responsible for all fines levied by the regulatory agencies regarding non-compliance.

1.3.1 Protection of Existing Areas To Remain

All project work including, but not limited to, lead hazard work, storage, transportation, and disposal shall be performed without damaging or contaminating adjacent work and areas. Where such work or areas are damaged or contaminated, the Contractor shall restore work and areas to the original condition at no additional cost to the Government.

1.3.2 Coordination with Other Work

The contractor shall coordinate lead hazard control activities with work being performed in adjacent areas. Coordination procedures shall be explained in the Contractor's Accident Prevention Plan and shall describe how the Contractor will prevent lead exposure to other contractors and/or Government personnel performing work unrelated to lead hazard control activities.

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Materials and Equipment;
Expendable Supplies;

A description of the materials, equipment and expendable supplies required; including Material Safety Data Sheets (MSDSs) for material brought onsite to perform the work.

Qualifications; G

A report providing evidence of qualifications and designating responsibilities for personnel and laboratories.

SD-06 Test Reports

Pressure Differential Log;
Licences, Permits, and Notifications; G
[AM#0005] **Lead Abatement and Hazard Control (LAHC) Plan and** Accident Prevention Plan (APP); G

A **[AM#0005]** **plan** _____ describing how the Contractor will protect workers, **[AM#0005]** _____ **adjacent** occupants, and building contents while performing lead hazard control activities; and how project clearance will be performed. **[AM#0005]** **The LAHC plan shall address equipment and method of abatement, occupational and environmental exposure assessment, engineering work practices, worker and environmental protection plan, composite sample TCLP lead test results, supervisor (competent person) qualifications, current training certificate with a state approved facility, a waste disposal plan (which discusses containment, transportation, containment, and spill control and prevention), current permit for third party laboratory, current permit from TSD facility and a statement to accept waste, waste manifest, waste hauler current permit, notification to state, and clearance requirement per EP 1110-1-29, Lead Hazard Clearance Inspection, Standard Scope of Work. EP 1110-1-29, Lead Hazard Clearance Inspection, Standard Scope of Work is available on http://synectics.net/resources.**

Sampling and Analysis; G

A log of the analytical results required for the sampling. The log shall be kept current.

Clearance Report; G

Report prepared by the QSHP.

1.5 QUALIFICATIONS

1.5.1 Qualifications and Organization Report

The Contractor shall furnish a qualification and organization report. The report shall describe the qualifications of the qualified safety and health professional (QSHP), onsite safety and health supervisor (OSHS), labor staff and the independent risk assessor. The report shall include an organization chart showing the Contractor's personnel by name and title and project specific responsibilities and authorities. The report shall describe the qualifications of the laboratories selected for this project. The report shall be signed by the Contractor and the qualified safety and health professional to indicate that all personnel and laboratories comply with certification and experience requirements of this section and that project personnel have been given the authority to complete the tasks assigned to them.

1.5.2 Personnel and Subcontractor Responsibilities and Qualifications

1.5.2.1 Qualified Safety and Health Professional (QSHP)

The QSHP shall be responsible for development of project specific requirements in the Accident Prevention Plan (APP); supervise implementation of the APP requirements; visit the site as needed to verify effectiveness of the APP and to coordinate resolution of unknown situations that may develop as the work progresses; be available to provide consultation to the Onsite Safety and Health Supervisor (OSHS); review sampling and analytical results to evaluate occupational exposure levels, verify effectiveness of controls and determine if clearance requirements have been met. The QSHP shall have demonstrable experience with the implementation of occupational safety and health regulations.

1.5.2.2 Lead Hazard Control Workers

Lead Hazard Control workers shall be responsible for performing the labor necessary to complete the lead hazard control activities required in this contract.

1.5.2.3 Independent Certified Risk Assessor

The independent Certified Risk Assessor shall be a subcontractor to the prime Contractor on the project. The risk assessor shall be responsible to perform the sampling and evaluating the analytical data to verify clearance levels have been achieved. The independent risk assessor shall sign the clearance report indicating clearance requirements for the contract have been met.

1.5.2.4 Testing Laboratories

The laboratory selected to perform analysis on paint chip, soil or dust wipe samples shall be accredited by EPA's National Lead Laboratory Accreditation Program (NLLAP). The laboratory selected to perform analysis on worker exposure (industrial hygiene) samples shall be in the American Industrial Hygiene Association's Industrial Hygiene Laboratory Accreditation Program (IHLAP) and shall be successfully participating in the Proficiency Analytical Testing (PAT) program for lead, **[AM#0005]** **shall be a third party independent of the contractor performing abatement, and shall have the current state license.**

1.5.2.5 Blood Lead Testing

The laboratory selected to perform analysis on worker blood samples shall be approved by OSHA and meet the requirements contained in http://www.osha-slc.gov/OCIS/toc_bloodlead.html.

1.5.2.6 Disposal Facility and Transporter

The Contractor shall furnish written evidence that the landfill to be used is approved for lead disposal by USEPA, state, and local requirements. Copies of any required signed agreements between the Contractor (including subcontractors and transporters) and the lead disposal facility shall be provided. The contractor will coordinate with the Facility Directorate of Public Works Classification Unit for handling and disposal of all regulated wastes. **[AM#0005]** **The disposal facility and waste hauler shall have the current state permit handling the characterized wastes.**

1.6 REGULATORY REQUIREMENTS

In addition to the detailed requirements of this specification, work shall be performed in accordance with requirements of EM 385-1-1 and applicable regulations including, but not limited to 29 CFR 1910, 29 CFR 1926, especially Section .62, and the accepted Accident Prevention Plan with Appendices. Matters of interpretation of the standards shall be resolved to the satisfaction of and with the concurrence of, the Contracting Officer before starting work. Where these requirements vary, the most stringent shall apply.

1.7 ACCIDENT PREVENTION PLAN (APP)

1.7.1 APP Content and Organization

The Contractor's Accident Prevention Plan shall be organized into 5 parts, consisting of the overall plan and 4 appendices. The overall plan shall address each element in Appendix A of EM 385-1-1 in project specific detail. The elements are: a. Signature Sheet, b. Background Information, c. Statement of Safety and Health Policy, d. Responsibilities and Lines of Authorities, e. Subcontractors and Suppliers, f. Training, g. Safety and Health Inspections, h. Safety and Health Expectations, Incentive Programs and Compliance, i. Accident Reporting, j. Medical Support, k. Corporate Plans and Programs required by this contract, (HAZCOM, Respiratory Protection).

1.7.1.1 Lead Hazard Control Plan Appendix

The Lead Hazard Control Appendix to the APP shall address occupational exposure issues and shall describe the procedures to be followed to protect employees from lead hazards while performing lead hazard control activities. Each of the following elements shall be addressed in the lead hazard control appendix:

a. The location and a brief description of each work activity that will emit lead into the workplace atmosphere. A description of any components containing lead shall be included and keyed to the project drawings.

b. Description of equipment and materials, controls, crew size, worker responsibilities, and operating and maintenance procedures.

c. Description and sketch of the Lead Hazard Control Areas, including decontamination areas.

d. Description of the specific lead control methods and procedures to protect workers and other onsite contractors from lead exposure.

e. Technologic equipment used to keep occupational exposure below the Permissible Exposure Limit and minimize worker exposure to lead (i.e., HEPA-filtered vacuum equipment/cleaners, special negative air enclosure equipment and supplies, etc.).

f. Worker Exposure Assessment including methods and procedures to monitor and document worker exposure to lead. Worker exposure monitoring shall be broken into two parts in the plan. Part A: Initial Determination. The Contractor shall describe worker monitoring (if performed for the "initial determination" described

in 29 CFR 1926 (.62) (d). Monitoring for the initial determination may be omitted from the plan if the Contractor has sufficient proof from previous operations as specified in 29 CFR 1926 (.62) (d)(3)(iii) and (iv) that workers will not be exposed over the action level. The Contractor shall substitute objective proof of action level compliance in Part A if "initial determination" monitoring is omitted. Part B: Continued Exposure Monitoring. Worker exposure monitoring after the initial lead exposure determination has been made.

g. Work Practices Program describing the protective clothing to be used to protect workers from lead exposure, house keeping procedures employed to minimize spread on lead contamination in the lead hazard control area, hygiene facilities and practices used to prevent workers from inadvertent ingestion of lead.

h. Administrative Control Procedures, to be used as a last resort, to limit worker exposure to lead. The worker rotation schedule to be employed, should engineering or personal protective equipment precautions fail to be effective, shall be described. This element of the plan shall be omitted if administrative controls will not be used.

i. Medical Surveillance practices and procedures used to monitor worker exposure to lead and to assure fitness for wearing respiratory protection devices.

j. Worker training meeting the requirements of 29 CFR 1926 Sections (.62) and (.59) to assure workers understand hazard associated with working with lead and how to protect themselves.

k. Security: Twenty-four hour security guard for each lead hazard control area. A log book shall be kept documenting entry into and out of the lead hazard control area by personnel authorized by the Contractor and the Contracting Officer. Persons entering lead hazard control areas shall be trained, medically evaluated, and equipped with personal protective equipment required for the specific control area to be entered.

1.7.1.2 Activity Hazard Analyses Appendix

An Activity Hazard Analysis (AHA) shall be prepared for each work task data element specified on the individual work task data element sheets at the end of this section. The AHA shall be submitted to the Contracting Officer prior to beginning specified work. Format shall be in accordance with EM 385-1-1, figure 1-1. The AHA shall be continuously reviewed and modified, when appropriate, to address changing conditions or operations. Each accepted AHA shall be appended to and become part of the APP.

1.7.1.3 Occupant/Building Protection Plan Appendix

The Contractor shall develop and implement an Occupant/Building Protection Plan describing the measures and management procedures to be taken during lead hazard control activities to protect the building occupants/building facilities (and future building occupants/facilities) from exposure to any lead contamination while lead hazard control activities are performed.

1.7.1.4 Clearance Plan Appendix

The Contractor shall develop a Clearance Plan describing practices and procedures used to assure that lead hazard control activities are complete and that lead contamination within the lead hazard control area comply with final clearance levels or visual clearance criteria. Sampling and analysis procedures used to document project completion and clearance goals shall be explained in the Clearance Plan Appendix.

1.8 PRE-CONSTRUCTION SAFETY CONFERENCE

1.8.1 Conference General Requirements

The Contractor and the QSHP shall attend a pre-construction safety conference prior to starting work. Items required to be submitted shall be reviewed for completeness, and where specified, for acceptance. Details of the APP shall be revised to correct any deficiencies, and resubmitted for acceptance. Onsite work shall not begin until the APP has been accepted, unless otherwise authorized by the Contracting Officer. One copy of the APP shall be maintained in the Contractor's jobsite file, and a second copy shall be posted where it will be accessible to personnel on the site. As work proceeds, the APP shall be adapted to new situations and conditions. Changes to the APP shall be made by the QSHP with acceptance by the Contracting Officer. Should an unforeseen hazard become evident during performance of the work, the QSHP shall inform the Contracting Officer, both verbally and in writing, for immediate resolution. In the interim, the QSHP shall take necessary action to re-establish and maintain safe working conditions; and to safeguard onsite personnel, visitors, the public, and the environment. Disregard for provisions of this specification, or the accepted APP, shall be cause for stopping of work until the matter is rectified.

1.8.2 Preparatory Inspection Meeting

The Contractor shall arrange and hold a preparatory inspection meeting to review completeness and adequacy of the APP immediately prior to beginning each phase of work.

1.9 MEDICAL SURVEILLANCE REQUIREMENTS

The Contractor shall comply with the following medical surveillance requirements:

a. The Contractor shall make every attempt to keep occupational exposure to lead on this project below the action level of 30 micrograms/cubic meter defined in 29 CFR 1926 (.62). If it is not possible, and if occupational exposures could possibly exceed the action level for 30 or more days per year, the Contractor shall institute a medical surveillance program. The program shall meet the examination frequency and content requirements specified in paragraph (j)(1), (j)(2) and (j)(3) of 29 CFR 1926 (.62). Medical removal as specified in paragraph (k) of 29 CFR 1926 (.62), if necessary, shall be at the Contractor's expense.

b. Medical surveillance and biological monitoring shall be in compliance with 29 CFR 1926 (.62) (g) and (j). Initial biological monitoring shall be performed on lead hazard control workers prior to assignment to the project. Workers shall not be assigned to the project if results indicate a need for restricted activities.

c. All lead hazard control workers shall pass the medical

examinations necessary to be approved by the occupational physician to wear respiratory protection on this project. Occupational physician's approval shall be given prior to assignment to the project.

1.10 RESPIRATORY PROTECTION PROGRAM

The Contractor shall have a written respiratory protection program and shall be fully capable of implementing the requirement of the respiratory protection program on this project. The respiratory protection program shall meet the requirements of 29 CFR 1926 (.62) and 29 CFR 1910 (.134). Project specific respiratory protection requirements shall be included in the lead hazard control plan appendix of the Contractor's accident prevention plan.

1.11 LICENCES, PERMITS AND NOTIFICATIONS

The Contractor shall certify in writing to the Contracting Officer and the Facility DPW Environmental Office at least 10 working days prior to the commencement of work that notifications have been submitted to the Texas Department of Health. The Contractor is responsible for all associated fees or costs incurred in obtaining the licenses, permits and notifications.

1.12 TRAINING

1.12.1 OSHA Training Requirements

All Contractor personnel and/or subcontractors performing or responsible for onsite oversight of lead hazard control activities shall meet the following training requirements.

a. Content of 29 CFR 1926 (.62) and its appendices.

b. How operations could result in exposure over the action level.

c. Purpose, selection, fitting, use and limitations of respirators.

d. Purpose and description of the medical surveillance program.

e. Use of engineering controls and good work practices to limit occupational exposure to lead.

f. Implementation of the lead hazard control plan appendix of the accident prevention plan.

g. Medical supervision for the use of chelating agents.

h. Employee right of access to medical surveillance records as specified in 29 CFR 1910 (.20).

1.12.2 Qualified Safety and Health Professional

The qualified safety and health professional shall meet the training requirements in paragraph 1.12.1 and shall meet the training, experience and authority requirements in 29 CFR 1926 (.62) to be a competent person and be trained and have the experience and education to meet 40 CFR 745 Subpart L requirements to carry the following certifications:

a. Certified Risk Assessor

b. Certified Project Designer
c. Certified Supervisor

1.12.3 Independent Risk Assessor

The independent risk assessor shall meet the training requirements in paragraph OSHA Training Requirements, above, and shall meet the training and experience requirements in 40 CFR 745 to carry certification as a certified risk assessor.

1.12.4 Abatement Worker

Workers shall meet the OSHA Training Requirements specified above and the training requirements in 40 CFR 745 Subpart L to carry certification as a Certified Worker, if required.

1.12.5 Training Program Certification

Training to meet 40 CFR 745 Subpart L requirements shall be provided by an EPA accredited training provider and the Contractor shall provide proof in the Qualifications and Organization Report showing that personnel have passed certification examinations for their respective disciplines, that fees for certification have been paid to the EPA (or to the state for state-run programs) and that EPA has certified the QSHP, independent risk assessor, certified workers to perform their duties.

1.13 SAMPLING AND ANALYSIS

1.13.1 Sampling and Analytical Procedures

1.13.1.1 Sampling and Analysis Methods

Analysis shall conform to NIOSH 84-100 Method 7082, Lead, for personal sampling required by 29 CFR 1926 (.62). Sampling shall conform to ASTM E 1553 .

1.13.1.2 Paint Chip Sampling and Analysis

Sampling shall conform to ASTM E 1729 Analysis shall conform to ASTM E 1613.

1.13.1.3 Dust Wipe Materials, Sampling and Analysis

Sampling shall conform to ASTM E 1792. Analysis shall conform to ASTM E 1613.

1.13.1.4 Soil Sampling and Analysis

Sampling procedures shall conform to ASTM E 1728. Sampling materials shall conform to ASTM E 1727. Analysis shall conform to ASTM E 1613.

1.13.2 Occupational Exposure Assessment

Sampling and analytical procedures to determine compliance with the occupational exposure monitoring requirement of this section shall be described in the lead hazard control plan appendix of the Contractor's accident prevention plan. Monitoring for the initial determination may be omitted if the Contractor has sufficient proof from previous operations as specified in 29 CFR 1926 (.62) (d)(3)(iii) and (iv) that workers will not be exposed over the action level. The following occupational exposure monitoring requirements apply and shall be implemented if the requirements

of 29 CFR 1926 (.62)(d)(3) (iii) and (iv) cannot be demonstrated.

a. During Initial Monitoring the Contractor shall representatively sample employees with the greatest potential for exposure to aerosolized lead.

b. Continued/Additional Monitoring shall meet applicable paragraphs in 29 CFR 1926 (.62)(d)(6), Frequency, after the initial determination has been made.

1.13.3 Lead Hazard Control Area/Containment Monitoring

The Contractor shall perform a visual inspection once per day outside the lead hazard control area to assure visual clearance criteria are maintained while lead hazard control activities are performed. The Contractor shall clean at its own expense, and to the Contracting Officer's satisfaction, all contaminated surfaces outside the lead hazard control area, if surfaces fail visual clearance criteria.

1.13.4 Occupancy During Work

The Contractor shall wipe sample a floor surface at a location no more than 10 feet outside the entrance to the lead hazard control area at a frequency of once per day while lead hazard control activities are being performed. Wipe sampling analytical results shall pass clearance criteria for floors specified in this contract. The Contractor shall clean all contaminated surfaces at its own expense and to the Contracting Officer's satisfaction, if floor wipe samples required in this paragraph fail clearance criteria.

1.13.5 Clearance Monitoring

Sampling and analytical procedures to determine the clearance requirements of this section shall be described by the Contractor in the Clearance Plan Appendix of the Accident Prevention Plan. The Contractor shall perform the following sampling and analysis to verify that clearance requirements for the contract (inside the lead hazard control) area have been met when lead containing coatings have been removed by methods other than as entire components with applicable substrate.

a. The Contractor shall take dust wipe samples inside the lead hazard control area after the final visual inspection in the quantities and at the locations specified.

(1) Floors - 1 per room.
(2) Interior Window Sills - 1 per window unit.
(3) Window Troughs - 1 per window unit.

b. The Contractor shall take exterior bare soil samples inside the lead hazard control area after the final visual inspection in the quantities and at the locations specified.

(1) Near the building foundation - Three each area.
(2) Nearby Play areas - 1 each area.

1.13.6 Waste Disposal Sampling

The Contractor shall sample the following waste streams for TCLP analysis to determine waste disposal requirements.

a. The Contractor shall take representative samples of building demolition debris.

b. The Contractor shall take representative samples of paint chips.

c. The Contractor shall take representative samples of paint residue from stripping (heat or chemical) operations.

d. The Contractor shall take representative samples of soil.

e. The Contractor shall take representative samples of settled dust in vacuum canisters.

1.13.7 Analytical Results

The Contractor shall develop and maintain during the course of the project a log of analytical results generated by the above sampling requirements. The log shall clearly describe the reason for which the sample was taken (worker exposure, migration control, clearance) the analytical result for each sample and evaluate if the analytical result passed or failed the action levels. At a minimum, the Contractor shall include analytical results for samples required to be taken in paragraphs Occupational Exposure Assessment, Lead Hazard Control Area/Containment Monitoring, Occupancy During Work, and Clearance Monitoring specified above.

1.14 CLEARANCE REQUIREMENTS

The Contractor shall describe clearance requirements for this project in the Clearance Plan Appendix of the Accident Prevention Plan.

a. Clearance levels inside lead hazard control area, public and commercial buildings:

(1) Floors 40 micrograms per square foot.
(2) Interior Window Sills 250 micrograms per square foot.
(3) Interior Window Wells 400 micrograms per square foot.
(4) Bare soils 1200 micrograms per square foot.

b. Clear lead hazard control areas in industrial facilities: visual clearance criteria.

1.15 PERSONAL PROTECTIVE EQUIPMENT (PPE)

The Contractor shall describe the PPE to be used to protect workers from lead hazards in the Lead Hazard Control Plan Appendix of the Accident Prevention Plan. The Contractor shall furnish, at no cost to the workers, clothing for protection from lead-contaminated dust and debris. An adequate supply of these items shall be available for worker and Government personnel use. Protective clothing shall include:

a. Coveralls : Full-body moisture permeable (breathable)disposable coveralls shall be provided to lead hazard control workers.

b. Boots: Boots and shoes shall be provided as required by EM 385-1-1 Section 05.A.08 for workers. Boot/shoe covers shall be provided to prevent contamination of boots and shoes.

c. Hand Protection: Gloves, etc., shall be provided as required by EM 385-1-1 Section 05.A.10 for workers.

d. Head Protection: Hard hats shall be provided as required by 29 CFR 1910 (.135) and EM 385-1-1 Section 05.D for workers and authorized visitors.

e. Eye and Face Protection: Eye and face protection shall be provided as required by 29 CFR 1910 (.133) and EM 385-1-1 Section 05.B for workers and authorized visitors.

f. Respirators: NIOSH certified air-purifying respirators shall be provided for use as respiratory protection for airborne lead and for other hazardous airborne contaminants that may be encountered; as determined by the on-site safety and health supervisor. At a minimum, respirators shall be furnished to each employee required to enter a lead hazard control area where an employee exposure assessment has not yet been performed, or where monitoring data establishes the need for respiratory protection, or if requested by the employee.

g. Respirator Cartridges: Respirator cartridges shall be changed out and properly disposed of when the they become sufficiently loaded with particulate matter that workers experience breathing resistance. Cartridges shall be N, R or P 100 rated to assure sufficient protection from lead exposure.

1.16 HYGIENE FACILITIES

The Contractor shall describe the personal hygiene facilities for be used by the workers in the Lead Hazard Control Plan Appendix of the Accident Prevention Plan. The Contractor shall provide hygiene facilities for lead hazard control workers. Hygiene facilities shall consist of the following:

1.16.1 Hand Wash Stations

The Contractor shall provide hand washing facilities for use by lead hazard control workers. Hand washing facilities shall comply with the requirements in 29 CFR 1926 (.51) (f). Faces and hands shall be washed when leaving the lead hazard control area and after each work-shift if showers are not provided.

1.16.2 Change Area

The Contractor shall provide a change area to workers. The change area shall be equipped so that contaminated work clothing and street clothes shall be stored separately to prevent cross contamination.

1.16.3 Showers

Showers shall be provided if feasible and if worker exposures exceed the PEL. When provided, showers facilities shall meet the requirements of 29 CFR 1926 (.51) (f).

1.16.4 Eating Area

The Contractor shall set aside an area or provide a room for taking breaks and eating lunch. This area shall be kept free from lead contamination. Workers shall be required to follow the procedures in 29 CFR 1926 (.62) (i)(4) when using the room.

1.17 POSTED WARNINGS AND NOTICES

The following regulations, warnings, and notices shall be posted at the worksite in accordance with 29 CFR 1926 (.62).

1.17.1 Regulations

At least two copies of 29 CFR 1926 (.62) shall be made available for use by either the Contracting Officer or affected workers; and for the purpose of providing required information and training to the workers involved in the project. One copy shall be maintained in the Contractor's jobsite file, and a second copy shall be posted where it will be accessible to workers on the site.

1.17.2 Warning Signs and Labels

Warning signs shall be posted in each lead hazard control area where worker exposure to lead is undetermined or where the exposures are above the permissible exposure limit as defined in 29 CFR 1926 (.62). Signs shall be located to allow personnel to read the signs and take necessary precautions before entering the lead hazard control area.

1.17.2.1 Warning Signs

Warning signs shall be in English and Spanish, be of sufficient size to be clearly legible, and display the following:

WARNING
LEAD WORK AREA
POISON
NO SMOKING OR EATING

1.17.2.2 Warning Labels

Warning labels shall be affixed to all lead waste disposal containers used to hold materials, debris and other products contaminated with lead hazards; warning labels shall be in English , and be of sufficient size to be clearly legible, and display the following:

CAUTION: CLOTHING CONTAMINATED WITH LEAD. DO NOT REMOVE DUST BY

BLOWING OR SHAKING. DISPOSE OF LEAD CONTAMINATED WASH WATER IN

ACCORDANCE WITH APPLICABLE FEDERAL, STATE OR LOCAL REGULATIONS.

1.17.3 Worker Information

Right-to-know notices shall be placed in clearly visible areas accessible to personnel on the site, to comply with Federal, state, and local regulations.

1.17.4 Air Monitoring Results

Air monitoring results shall be prepared so as to be easily understood by the workers. One copy shall be maintained in the Contractor's jobsite file, and a second copy shall be posted where it will be accessible to the workers as specified in 29 CFR 1926 (.62).

1.17.5 Emergency Telephone Numbers

A list of emergency telephone numbers shall be posted at the site. The list shall include numbers of the local hospital, emergency squad, police and fire departments, Government and Contractor representatives who can be reached 24 hours per day, and professional consultants directly involved in the project.

1.18 MATERIALS AND EQUIPMENT

Sufficient quantities of health and safety materials required by 29 CFR 1926 (.62), and other materials and equipment needed to complete the project, shall be available and kept on the site.

1.18.1 Abrasive Removal Equipment

The use of powered machinery for vibrating, sanding, grinding, or abrasive blasting is prohibited unless equipped with local exhaust ventilation systems equipped with high efficiency particulate air (HEPA) filters.

1.18.2 Negative Air Pressure System

1.18.2.1 Minimum Requirements

Work shall not proceed in the area until containment is set up and HEPA filtration systems are in place. The negative air pressure system shall meet the requirements of ANSI Z9.2 including approved HEPA filters per UL 586. Negative air pressure equipment shall be equipped with new HEPA filters, and shall be sufficient to maintain a minimum pressure differential of minus 0.02 inch of water column relative to adjacent, unsealed areas. Negative air pressure system minimum requirements are listed below:

a. The unit shall be capable of delivering its rated volume of air with a clean first stage filter, an intermediate filter and a HEPA filter in place.

b. The HEPA filter shall be certified as being capable of trapping and retaining mono-dispersed particles as small as 0.3 micrometers at a minimum efficiency of 99.97 percent.

c. The unit shall be capable of continuing to deliver no less than 70 percent of rated capacity when the HEPA filter is 70 percent full or measures 2.5 inches of water static pressure differential on a magnehelic gauge.

d. The unit shall be equipped with a manometer-type negative pressure differential monitor with minor scale division of 0.02 inch of water and accuracy within plus or minus 1.0 percent. The manometer shall be calibrated daily as recommended by the manufacturer.

e. The unit shall be equipped with a means for the operator to easily interpret the readings in terms of the volumetric flow rate of air per minute moving through the machine at any given moment.

f. The unit shall be equipped with an electronic mechanism that automatically shuts the machine off in the event of a filter breach or absence of a filter.

g. The unit shall be equipped with an audible horn that sounds an alarm when the machine has shut itself off.

h. The unit shall be equipped with an automatic safety mechanism that prevents a worker from improperly inserting the main HEPA filter.

1.18.2.2 Auxiliary Generator

An auxiliary generator shall be provided with capacity to power a minimum of 50 percent of the negative air machines at any time during the work. When power fails, the generator controls shall automatically start the generator and switch the negative air pressure system machines to generator power. The generator shall not present a carbon monoxide hazard to workers.

1.18.3 Vacuum Systems

Vacuum systems shall be suitably sized for the project, and filters shall be capable of trapping and retaining all mono-disperse particles as small as 0.3 micrometers at a minimum efficiency of 99.97 percent. Used filters that are being replaced shall be disposed in a proper manner.

1.18.4 Heat Blower Guns

Heat blower guns shall be flameless, electrical, paint-softener type with controls to limit temperature to 1,100 degrees F. Heat blower shall be DI (non-grounded) 120 volts ac, and shall be equipped with cone, fan, glass protector and spoon reflector nozzles.

1.18.5 Chemical Paint Strippers

Chemical paint strippers shall not contain methylene chloride.

1.18.6 Chemical Paint Stripper Neutralizer

Neutralizers for paint strippers shall be compatible with the substrate and suitable for use with the chemical stripper that has been applied to the surface.

1.18.7 Detergents and Cleaners

Detergents or cleaning agents used shall have demonstrated effectiveness in lead control work using cleaning techniques specified by HUD 6780 guidelines.

1.19 EXPENDABLE SUPPLIES

1.19.1 Polyethylene Bags

Disposable bags shall be polyethylene plastic and shall be a minimum of 6 mils thick (4 mils thick if double bags are used) or any other thick plastic material shown to demonstrate at least equivalent performance; and shall be capable of being made leak-tight. Leak-tight means that solids, liquids or dust cannot escape or spill out.

1.19.2 Polyethylene Leak-tight Wrapping

Wrapping used to wrap lead contaminated debris shall be polyethylene plastic that is a minimum of 6 mils thick or any other thick plastic material shown to demonstrate at least equivalent performance.

1.19.3 Polyethylene Sheeting

Sheeting shall be polyethylene plastic with a minimum thickness of 6 mil, or any other thick plastic material shown to demonstrate at least equivalent performance; and shall be provided in the largest sheet size reasonably accommodated by the project to minimize the number of seams. Where the project location constitutes an out of the ordinary potential for fire, or where unusual fire hazards cannot be eliminated, flame-resistant polyethylene sheets which conform to the requirements of NFPA 701 shall be provided.

1.19.4 Tape and Adhesive Spray

Tape and adhesive shall be capable of sealing joints between polyethylene sheets and for attachment of polyethylene sheets to adjacent surfaces. After dry application, tape or adhesive shall retain adhesion when exposed to wet conditions, including amended water. Tape shall be minimum 2 inches wide, industrial strength.

1.19.5 Containers

When used, containers shall be leak-tight and shall be labeled in accordance with EPA, DOT and OSHA standards, as specified in paragraph WARNING LABELS.

1.19.6 Chemicals

Chemicals, including caustics and paint strippers, shall be properly labeled, used in accordance with the manufacturers recommendations and stored in leak-tight containers. Material Safety Data Sheets (MSDSs) shall be provided and hazard communication procedures implemented in conformance with paragraph 29 CRF 1926.59 Hazard Communication.

1.20 STORAGE OF MATERIALS

Materials shall be stored protected from damage and contamination. During periods of cold weather, plastic materials shall be protected from the cold. Flammable or hazardous materials shall not be stored inside a building. Materials shall be regularly inspected to identify damaged or deteriorating items. Damaged or deteriorated items shall not be used and shall be removed from the site as soon as they are discovered. Stored materials shall not present a hazard or an inconvenience to workers, visitors, and/or other occupants and employees of the facility in which they are located.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 WORK PROCEDURES

The Contractor shall perform work following practices and procedures described accident prevention plan.

3.1.1 Lead Hazard Control Areas, Equipment and Procedures

The Contractor shall set up lead hazard control areas and operate equipment within the lead hazard control area in a manner that will minimize

migration of lead dust beyond the lead hazard control area boundaries and minimize exposure to workers.

3.1.2 Lead Hazard Control Areas

Access into lead hazard control areas by the general public shall be prohibited. Workers entering the lead hazard control area shall meet medical surveillance requirements of this contract and shall be required to understand and follow procedures described in the Contractor's accident prevention plan for reducing lead exposure. Lead hazard control area preparation and restriction requirements follow:

a. Containment features for interior lead hazard control projects shall include: Polyethylene sheeting sealed with spray adhesive and duct tape and colored caution tape to designate the lead hazard control area. The floor in the lead hazard control area shall be covered with two layers of polyethylene sheeting. The entry/exit shall be sealed with a primitive air lock. Openings, such as HVAC supply and return air vents, into the lead hazard control area shall be sealed with polyethylene sheeting and duct tape or with sealed rigid coverings.

b. Containment features for exterior lead hazard control projects shall include: Plastic sheeting and a roped-off boundary perimeter, using caution tape or a barrier installed at 50 ft. distance from where the lead control work is performed.

3.1.3 Negative Air Pressure System Containment

a. The negative air pressure systems shall be operated to provide at least 4 air changes per hour inside the containment. The local exhaust unit equipment shall be operated continuously until the containment is removed. The negative air pressure system shall be smoke tested for leaks at the beginning of each shift. The OSHS is responsible to continuously monitor and keep a pressure differential log with an automatic manometric recording instrument. The Contracting Officer shall be notified immediately if the pressure differential falls below the prescribed minimum. The building ventilation system shall not be used as the local exhaust system for the lead hazard control area utilizing the negative air pressure system. The local exhaust system shall terminate out of doors unless the Contracting Officer allows an alternate arrangement. All filters shall be new at the beginning of the project and shall be periodically changed as necessary to maintain specified pressure differential and shall be disposed of as lead contaminated waste.

b. Discontinuing Negative Air Pressure System. The negative air pressure system shall be operated continuously during lead hazard control work unless otherwise authorized by the Contracting Officer. At the completion of the project, units shall be run until full cleanup has been completed and final clearance testing requirements have been met. Dismantling of the negative air pressure systems shall be as presented in the Lead Hazard Control Plan. The HEPA filter machine intakes shall be sealed with polyethylene to prevent environmental contamination.

3.2 USE OF HYGIENE FACILITIES

a. Personnel and equipment shall be decontaminated when exiting the lead hazard control area. The Contractor shall comply with the following personnel and equipment decontamination procedures:

(1) HEPA vacuum outer garments and equipment.
(2) Wet Wipe Equipment.
(3) Remover outer layer of garments.
(4) Thoroughly wash face and hands, if showering not required.
(5) Shower (if applicable).
(6) Remove Respirator (if applicable).
(7) Exit lead hazard control area.

b. The Contractor shall provide, and workers shall use, a change room to change into work clothing at the beginning of a work shift. At the end of the work shift workers shall change back into street clothing and leave contaminated work clothing at the site for disposal or laundering.

c. The Contractor shall provide an eating facility as free as practical from lead contamination. Workers shall be allowed usage of the eating facility for rest/lunch breaks.

3.3 FURNISHINGS

The Contractor shall remove furniture and equipment from the work area before lead hazard control work begins.

3.4 WASTE DISPOSAL PROCEDURES

3.4.1 Construction Debris and/or Sanitary Landfill Waste

The Contractor shall dispose of the following non-hazardous waste streams in a sanitary landfill: Building Demolition Debris; Used Personal Protective Equipment; Disposable material from containment structures.

3.4.2 Waste Stream Classification

The Contractor shall determine the RCRA waste classification for all waste streams generated by the lead hazard control project. The Contractor shall perform the sampling and analysis specified in paragraph WASTE DISPOSAL, evaluate analytical results and propose waste stream treatment and disposal requirements for the contract. The Contracting Officer will approve waste stream treatment and disposal requirements proposed by the Contractor.

3.4.3 RCRA Subtitle C Hazardous Waste

The Contractor shall dispose of the following waste streams at the RCRA subtitle C Treatment Storage and Disposal Facility or at the RCRA subtitle C hazardous wastes landfill: Building demolition debris, Lead contaminated soil.

3.4.4 Hazardous Waste Transportation and Disposal

The Contractor shall transport, treat and dispose of hazardous waste in accordance with the requirements of Section 02120A TRANSPORATION AND DISPOSAL OF HAZARDOUS MATERIALSand procedures set forth by the Facility DPW Classification Unit .

3.5 LEAD HAZARD CONTROL PROCEDURES, METHODS AND TECHNIQUES.

3.5.1 Encapsulation

The selection and use of liquid encapsulation products shall comply with ASTM E 1796.

3.5.1.1 Encapsulation with Non-Reinforced Liquid Coating

Non-reinforced liquid encapsulation coatings shall comply with ASTM E 1795.

3.5.1.2 Encapsulation with Reinforced Liquid Coating

Reinforced liquid encapsulation coatings shall comply with ASTM E 1797.

3.5.1.3 Encapsulation with Adhesively Bonded Systems

Surface preparation shall follow the selected manufacturer's surface preparation recommendations. Loose paint shall be removed by wet scrapping. Adhesively bonded floor tile shall be installed according to manufacturer's directions. Manufacturer's adhesive recommendations shall be followed. Adhesively bonded covers that are used for encapsulation shall not be used for friction surfaces or on deteriorated components; i.e. rotten wood, rusted steel, spalled plaster, and masonry in need of re-pointing; severely deteriorated paint films; or on surfaces in which there is a known incompatibility between two existing coating layers.

3.5.1.4 Over Coating of Lead-based Painted Surfaces

PreTox 2000 Demolition or an equivalent coating may be applied to lead-based paint coated surfaces prior to demolition activities, according to manufacturer's directions, as a means of minimizing disposal of hazardous wastes. All waste classification procedures (sampling, TCLP analysis, and DPW Classification Unit Instructions) otherwise required shall be performed regardless of pre-demolition activities.

3.5.2 Surface Refinishing

Comply with requirements of Section 09965A PAINTING HYDRAULIC STRUCTURES

3.5.3 Paint Removal Methods

Prohibited paint removal methods shall include: open flame burning or torching, including the use of heat guns having operating temperatures greater than 1,100 degrees F; machine sanding or grinding without HEPA exhaust; non-contained hydro blasting or high-pressure water wash; abrasive blasting or sandblasting without HEPA exhaust; dry scraping, except near electrical outlets or when using a heat gun. Chemical paint removers containing methylene chloride are prohibited. Building components and structures adjacent to the removal process shall be appropriately protected from damage due to the removal process employed. Stripping shall be done according to manufacturer's recommendations. Stripped substrates shall be thoroughly washed and neutralized before applying a primer or sealing coat.

3.5.3.1 Offsite Paint Removal

Building components to be stripped shall be removed using removal techniques that minimize the amount of airborne dust generated. The painted seams between walls and the components shall be cut with a utility razor knife to minimize wall damage. If more than one component is to be

removed and stripped, the labeling of each component for eventual reinstallation shall utilize a punch system. The identifying punches shall be made in an obscure location on the component. Once removed, the component shall be wrapped and sealed as specified for transport. Stripped components shall be thoroughly washed and neutralized after stripping. Stripped components shall be restored to structural soundness after stripping, if necessary; and shall be cleaned using standard HEPA vacuum/wet wash/HEPA vacuum cycle, dried, and pH neutralized before repainting.

3.5.3.2 Onsite Paint Removal

Paint remover shall be applied in accordance with the manufacturer's instructions. Outdoor application shall only be performed in weather conditions recommended by the manufacturer. The work area surrounding the application process shall be secured to prevent access by children and unauthorized personnel. Workers shall be provided with the appropriate personal protective clothing and equipment in accordance with manufacturer's recommendations and good industrial hygiene practice. A portable eyewash shall be provided whenever eye irritant strippers are used. An abundant source of running water shall be provided in the work area. The stripper shall be tested in a small area prior to full scale stripping. Caustic strippers shall not be used on aluminum or glass surfaces. Waste disposal shall be in accordance with paragraph WASTE DISPOSAL PROCEDURES. Stripped surfaces shall be neutralized and washed in accordance with manufacturer's instructions and paragraph CHEMICAL PAINT STRIPPER NEUTRALIZER. Stripped surfaces shall be completely dry before repainting, and shall be repainted only with paints proven compatible with the stripping techniques employed.

3.5.4 Lead Hazard Soil Barriers and Controls

Soil barriers to control lead hazards shall be built in accordance with the requirements and specifications included in the following paragraphs:

3.5.4.1 Removing Exterior Surface Lead-Contaminated Debris

Section 02120A TRANSPORTATION AND DISPOSAL OF HAZARDOUS MATERIALS.

3.6 CLEARANCE PROCEDURES

3.6.1 Visual Inspection

QSHP shall perform a visual inspection, using the form at the end of this section, for each lead hazard control area to assure that lead hazard control activities, identified in the individual work task data elements, have been properly completed. The QSHP shall visually verify that lead hazards have been removed, control technology has been appropriately applied/installed and that the lead hazard control area is free of visible dust and paint chips generated by lead hazard control activities.

3.6.2 Analytical Demonstration of Clearance

After the visual inspection the independent risk assessor shall take clearance samples for laboratory analysis to verify clearance requirements specified in paragraph CLEARANCE REQUIREMENTS have been met.

3.7 EVALUATION OF SAMPLING AND MONITORING RESULTS

Analytical results from samples taken during lead hazard control activities shall be evaluated to determine compliance with occupational safety and health standards and project specific control efficiency and clearance/clean up levels.

3.7.1 Occupational Safety and Health

The QSHP shall review the analytical results from samples taken for the initial exposure assessment and continued occupational safety and health monitoring if required. Effectiveness and adequacy of personal protective equipment, respirators, work practices, hygiene facilities and personal decontamination procedures shall be evaluated and upgrades/downgrades in equipment and procedures made. After notifying the Contracting Officer the following shall be applied:

a. Exposures over the PEL (0.05 mg/cubic meter):

(1) Improve work practices to reduce exposures.

(2) Don respirators.

(3) Assure eating facilities and change rooms are clean and are free from settled dust.

(4) Shower as part of personal decontamination.

b. Exposures over the Action Level (0.03 mg/cubic meter):

(1) Assure exposed individuals enrolled in the medical surveillance program.

(2) Assure exposed individuals enrolled in and up to date with lead exposure training requirements.

3.7.2 Control Efficiency of Containment Features

The QSHP shall review and document results of the visual inspection determining visual clearance criteria are being met while lead hazard control activities are being performed. The QSHP shall review analytical results from samples taken to determine if lead is migrating outside lead hazard control areas at levels in excess of clearance criteria. The QSHP shall notify the Contracting Officer and apply the following actions if results exceed project specific clearance levels outside the lead hazard control area:

a. Repair/improve containment.

b. Improve work practices to reduce lead aerosol generation.

3.7.3 Clearance

The QSHP shall review analytical results for the samples taken to determine compliance with project specific clearance requirements. The following actions apply and shall be performed at the Contractor's expense if project specific clearance levels are exceeded:

a. Reclean surfaces.
b. Retest to determine clearance.

3.7.4 Removal of Lead Hazard Control Area

Upon acceptance of the final clearance certification by the Contracting Officer, and when authorized, cleared Lead Hazard Control Area boundary controls and warning signs shall be removed.

3.8 CLEARANCE REPORT

The QSHP shall prepare a clearance report including the following information:

a. Start and completion dates of lead hazard control activities.

b. Type of lead hazard control activity performed (i.e., abatement, interim control, renovation, remodeling), locations and lead hazards controlled or abated.

c. The name and address of each firm conducting lead hazard control activities and the name of each supervisor assigned to the project.

d. The Occupant Protection Plan prepared pursuant to paragraph OCCUPANT/BUILDING PROTECTION PLAN.

e. The name, address and signature of the QSHP or independent risk assessor to indicate clearance requirements have been met.

f. Certification of each Final Cleaning and Visual Inspection performed by the QSHP.

g. Analytical results from clearance sampling performed by the QSHP or independent risk assessor, the name of the laboratory that conducted the analysis. Results shall be provided in both the laboratory report and on the appropriate example forms provided at the end of this section.

h. A detailed written description of the lead hazard control activities performed, including hazard control methods used, locations of rooms and/or components where lead hazard control activities occurred, reason for selecting particular hazard control methods for each component, and any suggested monitoring of encapsulants or enclosures.

i. Hazardous waste disposal documentation.

j. Contractor provided installation/maintenance manuals.

3.9 TITLE TO MATERIALS

Materials resulting from demolition work, except as specified otherwise, shall be come the property of the Contractor, and shall be disposed of in accordance with Section 02220 DEMOLITION, except as specified.

3.10 PAYMENT FOR HAZARDOUS WASTE

Payment for disposal of hazardous waste will not be made until a signed copy of the manifest from the treatment or disposal facility certifying the amount of lead-containing materials delivered is returned and a copy is furnished to the Government.

3.11 CERTIFICATION OF VISUAL INSPECTION

Certify that the lead hazard control areas(s) for each individual work task data elements have passed visual clearance criteria and are ready for clearance sampling. To pass visual clearance, lead hazards have to be removed; control technology appropriately applied/installed; the lead hazard control area must be free from visible dust debris, paint chips or any other residue that may have been generated by the lead hazard control activities.

Signature by the QSHP indicates that the described lead hazard control area(s) have passed visual clearance criteria. Provide detailed description of each Lead Hazard Control Area.

_____

_____

_____

BY:_____
QSHP Date

Print name and title _____

CONTRACTING OFFICER ACCEPTANCE OR REJECTION

The Contracting Officer hereby determines that the Contractor has performed visual inspection of the lead hazard control area and by quality assurance inspection, finds the Contractor's work to be:

_____ Acceptable, ready for performance of clearance sampling

_____ Unacceptable, Contractor instructed to re-clean the lead hazard control area

BY: Contracting Officer's Representative
_____
Signature Date

Print name and title_____

Lead Hazard Control Clearance Sampling Certification Form

Date_____

Name of QSHP or Certified Risk Assessor_____

License No._____

Work Task Data Element _____

Clearance Levels_____
[40 CFR 745 Clearance Levels]
[24 CFR 35 Clearance Levels]

Sample quantity and location:
Windows _____
Floors _____
Exterior Soils _____

Date of sample collection_____Date Shipped to lab_____

Shipped by_____
Signature

I certify that the clearance samples taken meet the clearance sampling requirements of this contract.

By:_____ Date:_____
QSHP or independent risk assessor

Print name and Title:_____

CONTRACTING OFFICER ACCEPTANCE OR REJECTION

I have inspected sampling locations and procedures and have found them to be

_____Acceptable, meet contract requirements.

_____Unacceptable, do not meet contract requirements, Contractor is directed to resample.

By: Contracting Officer's Representative

Signature Date

Print Name and Title_____

INDIVIDUAL WORK TASK DATA ELEMENTS

Sheet _____ of _____

There is a separate data sheet for each individual work task.

WORK TASK DESIGNATION NUMBER: _____

2. LOCATION OF WORK TASK:

3. BRIEF DESCRIPTION OF THE LEAD HAZARD CONTROL ACTIVITY:

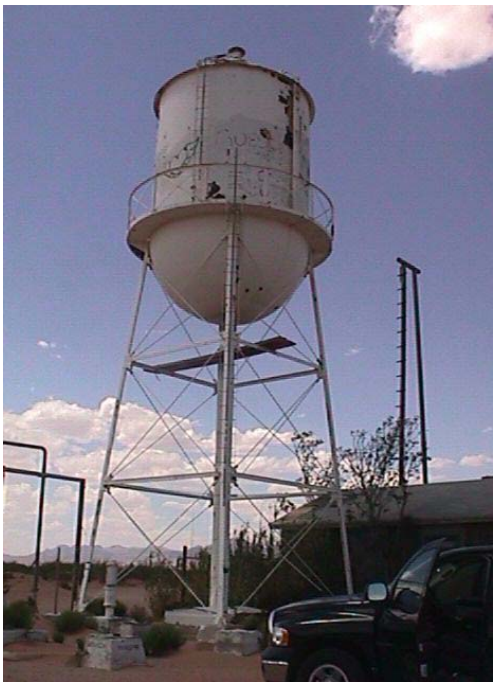
4. POST LEAD HAZARD CONTROL BUILDING/FACILITY USE: [TARGET HOUSING/CHILD OCCUPIED FACILITY OFFERED FOR SALE] [TARGET HOUSING/CHILD OCCUPIED ACTIVE FACILITY] [COMMERCIAL/PUBLIC] [INDUSTRIAL]

5. LEAD CONTAMINATED DEBRIS DISPOSAL DESTINATION: [Construction Debris/Sanitary] [RCRA subtitle C Treatments Storage and Disposal Landfill] [RCRA subtitle C Landfill]

6. CLEARANCE REQUIREMENTS: [40 CFR 745] [24 CFR 35] [VISUAL]

-- End of Section --

SAFENET
Environmental Services LLC



Lead Sampling

At:
Bldg 8421
FT. Bliss, TX

PREPARED FOR:
Mr. Tom Liddiard
US ARMY-DPW&L

BY:
SAFENET ENVIRONMENTAL SERVICES, LLC
MAY 12, 2003

SES Project No. 3T187

6500 Boeing Drive, Suite T-1
El Paso, Texas 79925
(915) 587-6900
www.safenetenvironmental.com

Asbestos Survey
For:

Building 8421
Fort Bliss, Texas

Submitted to:

Mr. Tom Liddiard
US Army – DPW&L
Fort Bliss, TX

Submitted by:

SafeNet Environmental Services, LLC
6500 Boeing Ste. T-1
El Paso, Texas 79922

Survey completed and prepared by:

Tim Jones,
TDH Asbestos Consultant #10-5575

David Morales,
General Manager

May 12, 2003
SES Project Number 3T187

Thomas Liddiard
DPWL
Ft. Bliss, TX

Dear Mr. Liddiard:

Please find enclosed Limited Lead Sampling report from SafeNet Environmental Services, LLC for Project No. 3T187. This report contains analytical results and interpretative information for lead "shots" taken 04/29 and 04/30/03 from facility 8421, Fort Bliss, TX, a water tower located on McGregor Range.

EXECUTIVE SUMMARY

SafeNet Environmental Services, L.L.C. (SafeNet) conducted Limited Lead Inspection (10 shots), on April 29th and 30th, 2003, at 8421. Sampling was performed of building materials on exterior areas due to be repainted, as well as inside the tank. The repainted areas must be scraped first due to the poor condition of the paint. These materials consisted of metal. Utilizing levels established by the HUD protocols under Chapter 7: Lead-based Paint Inspection, 1997 Revision, lead paint was discovered on the outside of the tank.

LEAD SAMPLING

On April 29, 2003, Mr. Tim Jones and on April 30, 2003, Mr. Jose Sandoval, certified lead risk assessors, performed a limited inspection to determine the presence of lead in paints in the areas to be repainted (water tank).

The search for the presence of lead was defined by using a NITON 701A X-Ray Fluorescent spectrum analyzer (XRF #XL700-U745NR4520). The NITON Corporation states that the NITON 701A can detect lead at $0.05mg/cm^2 \pm 0.01mg/cm^2$ under ideal conditions, and has included a calibration sheet with the unit when purchased. Under the HUD lead standards, painted surfaces are to be considered as lead-based paint at $1.0mg/cm^2 \pm 0.1mg/cm^2$, the unit was calibrated and the action level was set to this level. No readings from the XRF when the action level is set at 1.0 mg/cm^2 should be considered as inconclusive. This is based on the Performance Characteristic Sheet, effective date of April 17th 1998 Edition #4, created and written by HUD available from WWW.NITON.COM.

DISCUSSION

Lead samples by XRF were found to contain Lead-based Paint at levels greater than 1.0 mg/cm^2. (See results in Appendix A).

Six total samples on the exterior were found to contain lead-based paint according to the HUD definition. *However, some other painted surfaces may contain levels of lead below 1.0 mg/cm^2*, which could create lead dust or lead-contaminated soil hazards if the paint is turned to dust by abrasion, scraping, or sanding. Any workers involved in the renovation and disturbance of components containing lead must be trained, utilizing the methods of compliance prescribed by 29 CFR 1926.62 for removal and disposal.

SafeNet Environmental Services, LLC keeps all records secure and confidential. This report may be reproduced only in full and with consent of both SafeNet Environmental Services, LLC and the owner of the facility from which the samples were collected. Our report is based on the information available at this time. Should additional information become available, we reserve the right to determine the impact, if any, of the new information on our opinions and conclusions, and to revise our opinions and conclusions if necessary as warranted by the discovery of additional information. No warranty, either expressed or implied is made as to the opinions and recommendations presented in this report. This inspection report conveys opinions representing the SafeNet personnel's best judgment based on the limited visual observations of the property, supported by the testing described herein. Copies of this record will be released only with the written approval of the facility owner's authorized representative.

Thank you for the opportunity to provide this service. Should you have any questions or comments concerning this report please contact SafeNet Environmental Services, El Paso office at (915) 587-6900, or tjones@safenetenvironmental.com

Sincerely;

Tim Jones

SafeNet Environmental Services, LLC.

Attachments:
XRF Printout
cc: file

Appendix A

Serial #XL700-U745NR4520
PAINT
Header: Risk Assessor, Tim Jones
Site: Water tower-# 8421
Date: 5/7/2003
Ranges (NEG<INC<POS): Device PCS

No	Room	Source	Sub	Feat	Cnd	Clr	Ssec	Date/Time	Result	Pbl	Pbl E	Pbk	Pbk E	Pbc	Pbc E
1	Shutter Cal	1					27.7	4/29/2003 13:23	...	NA		NA		NA	
2	Calibrate						20.2	4/29/2003 13:26	POS	1.02	0.14	0.76	0.67	1.02	0.14
3	Calibrate						23.5	4/29/2003 13:26	POS	1.02	0.22	0.24	0.68	1.02	0.22
4		Tower	Metal	Leg	Poor	White	4.8	4/29/2003 13:34	POS	>>5.0		22.3	4.2	22.3	4.2
5		Tower	Metal	Cross brace	Poor	White	5.1	4/29/2003 13:34	POS	4.02	2.08	7.62	2	7.62	2
6		Tower	Metal	Hatch below	Poor	White	2.8	4/29/2003 13:35	POS	>>5.0		29.11	9.89	29.11	9.89
7		Tower	Metal	Ladder	Poor	White	3	4/29/2003 13:40	POS	3.39	2.71	33.08	11.28	33.08	11.28
8		Tower	Metal	Lower tank	Poor	White	4.7	4/29/2003 13:44	POS	>>5.0		6.82	2.33	6.82	2.33
9		Tower	Metal	Upper hatch door	Poor	White	3.1	4/29/2003 13:44	NEG	0.07	0.05	-1.09	2.1	0.07	0.05
10		Tower	Metal	Upper tank	Poor	White	4.4	4/29/2003 13:44	POS	>>5.0		23.76	4.49	23.76	4.49
11		Tower	Metal	Overflow cap	Poor	White	5.9	4/29/2003 13:50	NEG	0.18	0.36	0.16	1.32	0.18	0.36
12	Calibrate						21.7	4/29/2003 13:57	POS	1.01	0.15	0.72	0.67	1.01	0.15
13	Calibrate						25.5	4/29/2003 13:58	POS	0.95	0.17	0.39	0.67	0.95	0.17
14	Shutter Cal	1					27.7	4/30/2003 9:13	...	NA		NA		NA	
15	Calibrate						7	4/30/2003 9:17	POS	0.95	0.17	-0.13	1.19	0.95	0.17
16	Calibrate						5.1	4/30/2003 9:17	POS	1.04	0.26	-0.27	1.51	1.04	0.26
17		Wall	Metal	Inside tank	Fair	White	33	4/30/2003 9:25	NEG	0.16	0.12	-0.53	0.59	0.16	0.12
18		Wall	Metal	Inside tank	Fair	White	30.8	4/30/2003 9:26	NEG	0.18	0.13	-0.22	0.61	-0.22	0.61
19	Calibrate						20.3	4/30/2003 11:41	POS	0.99	0.13	0.82	0.72	0.99	0.13
20	Calibrate						47.8	4/15/2003 12:27	POS	1.1	0.16	0.77	0.46	1.1	0.16

Demolition List

Data to be verified by the Contractor.

Base Bid:
Work Area B:

Structure 1318 Chlorine Room
Wood framed structure, painted exterior and interior.

Structure 1318 Compressor Structure
Wood post and roof structure, painted, with clay tile roof.

Structure 1318 Concrete Reservoir
Painted exterior.

Work Area C:
Structures 11172 and 11173 Concrete Reservoirs and Exposed Water Piping
Painted exterior.

Work Area D:
Structure 4317 Concrete Reservoir and Exposed Water Piping
Painted exterior and asbestos roofing.

Work Area E:
Hueco Well Water Tank
Steel tank and structure, painted exterior (lead based).

Work Area F:
Tobin Wells Exposed Water Piping:
Painted exterior.

Options:
Work Area H:
Logan Heights Exposed Water Piping
Painted exterior.

Work Area L:
Tobin Wells Exposed Water Piping
Painted exterior.

Work Area M:
Structure 1318 Exposed Water Piping
Painted exterior.

SECTION 13284

REMOVAL, RECYCLING AND DISPOSAL OF REGULATED MATERIALS
AMENDMENT NO. 0005

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1926	Safety and Health Regulations for Construction
40 CFR 82	Protection of Stratospheric Ozone
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 263	Standards Applicable to Transporters of Hazardous Waste
40 CFR 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 268	Land Disposal Restrictions
40 CFR 270	EPA Administered Permit Programs: The Hazardous Waste Permit Program
40 CFR 273	Standards for Universal Waste Management
40 CFR 761	Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce and Use Prohibitions
49 CFR 171	General Information, Regulations and Definitions
49 CFR 173	Shippers - General Requirements for Shipments and Packagings
49 CFR 178	Specifications for Packagings

TEXAS ADMINISTRATIVE CODE (TAC)

TAC 335.91 - 335.94	Standards Applicable to Transporters of Hazardous Waste

U.S. ARMY CORPS OF ENGINEERS (COE)

COE EM 385-1-1	(Current Edition) Safety and Health Requirements Manual

1.2 DEFINITIONS

1.2.1 Regulated Materials

Regulated materials are arsenic (As), cadmium (Cd), cesium, chlordane, creosote, ethylene glycol, lead (Pb), mercury (Hg), oil and grease, ozone depleting chemicals (ODC), polychlorinated biphenyls (PCB), trichlorobenzene (TCB), diethylhexyl phthalate (DEPH), and tritium.

1.2.2 Arsenic

A solid and poisonous element that is commonly metallic, steel-gray, crystalline, and brittle. A poisonous trioxide of arsenic is used especially as an insecticide or weed killer. Typically, wood utility poles are treated with arsenic trioxide.

1.2.3 Ballast

A ballast is a device used to give starting voltage and/or stabilizing current to a fluorescent light tube. Ballast is a metal case filled with a solid or semisolid asphalt/tar substance that contain a capacitor. The capacitor may contain the following regulated materials: PCB, TCB or DEPH.

PCB was prohibited 1979 per 40 CFR 761. Approximately half of the ballasts made before 1979 contained PCB. "No PCBs" labels have been used to identify ballasts without PCB since 1 July 1978. Therefore all ballasts without "No PCBs" labels, with labels of fabrication on or before 1979 and no known date of fabrication are assumed as PCB ballasts. PCB-ballasts are regulated and disposal at a landfill is prohibited.

Ballasts from 4-foot lighting fixtures made before 1985 and from all other sizes of fixtures made before 1991 contained wet capacitors. The replacement dielectric fluid for PCBs in these wet capacitors is mineral oil and solvents. The hazardous solvents are typically TCB or DEPH. Unless the non-PCB ballasts are made after 1992, they are presumed to contain TCB or DEPH and shall be recycled at a permitted facility.

1.2.4 Cadmium

A bluish, white, malleable, ductile, toxic, bivalent, and metallic element. It is especially used in protective plating, bearing metals, and electrodes for batteries.

1.2.5 Americium

Americium (Am) isotope Am241 has been used as a source of ionization for smoke detector. It is believed to exist in two (2) forms, an alpha form, which has a double hexagonal close-packed structure, and a loss-packed cubic beta form. The alpha activity from Am241 is three times that of radium and must be handled with great care to avoid human contamination.

1.2.6 Chlordane

It was typically used for treatment of termites in soil around the building foundation and perimeter of structure. Sampling and testing are required for soil disposal.

1.2.7 Creosote

A brownish oily liquid, consisting chiefly of aromatic hydrocarbons. It is obtained by distillation of coal tar and used especially as a wood preservative (i.e. wood utility poles).

1.2.8 Emergency Lights

The emergency lights are operated by a back-up power source such as a battery. Mercury, cadmium, and lead are typically used in batteries.

1.2.9 Fluorescent Light Tube

A light bulb (or tube) of a fluorescent lighting fixture.

1.2.10 Lead

A heavy, soft, malleable, ductile, plastic but inelastic, bluish white, and metallic element. It is found mostly in combination and used especially in pipes, cable sheaths, batteries, solder, and shield against radioactivity.

1.2.11 Lighting Fixture

A unit containing a fluorescent light tube, light reflector, casing and ballast.

1.2.12 Mercury (Hg)

Mercury is a metal that is liquid at room temperature with a small vapor pressure. Mercury-containing items addressed in this specification are thermostats, fluorescent light tubes, and rechargeable battery.

1.2.13 Mercury Bulb Thermostat

A temperature control device containing a mercury ampule attached to a bimetallic sensing element.

1.2.14 Ozone Depleting Chemicals (ODC)

ODC include chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), halon, tetra (and tri) chloroethane, carbon tetrachloride and all isomers of methyl chloroform. A complete list of ODC are in40 CFR 82 Subpart A, Appendixes A and B. Items potentially containing ODC's are refrigeration equipment for HVAC systems, freezers, refrigerators, drinking fountains, ice machines, beverage and refrigerated food dispensers, halon fire extinguishers, and biomedical equipment.

1.2.15 Polychlorinated Biphenyls (PCBs)

PCB are defined in 40 CFR 761. They are oily in pure form. PCBs can enter the body through lungs, gastrointestinal tract, skin, can circulate through throughout the body, and can be stored in the fatty tissue. Available

animal studies indicate an oncogenic potential. PCBs can cause adverse reproductive effects and developmental toxicity in humans. Items containing PCBs in this specification are ballasts and transformers (see definition of Ballast below).

1.2.16 Retorting Mercury

The retorting of mercury is a process whereby mercury is distilled from other materials by using heat. During the fluorescent light tube recycling process, mercury is retorting from phosphor powder that coats the inside of the glass tube.

1.2.17 Transformer

A device employing the principle of mutual induction to convert variations of current in a primary circuit into variations of voltage and current in a secondary circuit. It contains PCB, TCB and/or DEPH. It is pole-mounted or pad-mounted.

1.2.18 Tritium

It is a low radioactive gas, radioactive isotope of hydrogen with atoms of three times the mass of ordinary light hydrogen atoms. It has very low radiotoxicity and is typically used in luminous instrument dials such as lighted exit signs.

1.2.19 Utility Pole

It is typically used for mounting power cable, panel, lighting, control switch, or electrical device such as transformers. An exterior wood pole is typically preserved by pressure treatment with application of arsenic trioxide or creosote.

1.2.20 Not Applicable

1.2.21 Content of Chlorination Mixing Tank

Removal content of chlorination mixing tank and chlorination related chemicals.

1.3 DESCRIPTION OF WORK

Prior to the start of demolition work, all items containing regulated materials shall be removed from all structures listed on the ATTACHMENT to SECTION 13281 LEAD HAZARD CONTROL. The estimated abatement quantities shall be provided by the Government. The Contractor shall submit to the COR, a recycling and/or disposal plan to verify abatement quantities, abatement method, and facility for recycling or disposal. A copy of abatement quantities shall provide to the (POC: Mr. David Felix) Fort Bliss Directorate of Environment. If item containing regulated material, described herein, is encountered during work at areas not on the attached list to SECTION 13281, the Contractor shall stop work and report finding to the COR. Items containing regulated material shall be salvaged and recycled to the maximum extent possible or incinerated. Final disposal of regulated materials in a landfill shall be in accordance with applicable Federal, state, and local regulatory agencies, and when all means of recycling and reuse are exhausted.

1.4 CONTRACTOR'S QUALIFICATIONS

The Contractor and subcontractors shall have at least 2 years experience with battery, thermostats, delisted pesticides and be familiar with Universal Waste Rules in accordance with 40 CFR 273 and Mercury-Containing and Rechargeable Battery Recycling Act, Public Law 104-142, effective since May 13, 1996. The Contractor and subcontractors shall have at least 2 years experience with PCB-containing items and familiar with 40 CFR 761. The Contractor and subcontractors shall have at least at least 2 years experience in purging and reclaiming ODC and certified in accordance with 40 CFR 82. They shall also be familiar with other applicable Federal, state and local regulations for work to be performed in this specification.

1.5 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Contractor's Qualifications; G.

Documentation of work experience in removal, recycling and/or disposal of items containing regulated material in accordance with paragraph, Contractor's Qualification.

ODC Recovery and Recycling Equipment's Certifications; G.

A copy of each ODC recovery and recycling equipment's certification in accordance with 40 CFR 82.158. A written agreement of the fluorescent light tubes recycling facility to transport the packaged fluorescent light tubes.

A copy of certification from each technician reclaiming ODC in accordance with 40 CFR 82.161 and 40 CFR 82.164.

Licenses and Permits; G.

A copy of the recycling/destruction facility license for handling, treatment and/or destruction of ballasts containing PCB, TCB and/or DEPH.

A copy of the RCRA Part B permit for the facility that is retorting mercury on site.

Proof of state registration or a copy of permit for pumping, hauling, and transporting hazardous waste in accordance with TAC 335.91 - 335.94, and EPA permit per 40 CFR 263 if transporting to other state.

Proof of state registration to pump, transport, or recycle grease trap sludge.

Recycling and/or Disposal Plan; G.

A recycling and/or disposal plan to verify abatement quantities, method and facility for recycling or disposal.

Notification of Recycling Activity; G.

Contractor is require to notify TCEQ 90 days prior to recycling activity with the form TNRCC-0525, "Generator Notification Form for Recycling Hazardous or Industrial Waste". Furnish a copy to the Contracting Officer.

Spill Prevention Plan; G.

A written Spill Prevention Plan shall be prepared in accordance with paragraph SPILLS AND SAFETY of this section shall be submitted at least 30 days before start of work.

Environmental Pollution Liability Insurance; F.

A copy of the current environmental pollution liability insurance policy from the Contractor (subcontractors) and the recycling and/or destruction facilities.

SD-11 Closeout Submittals

Closure Report; G.

A report in accordance with Part 3 paragraph CLOSURE REPORT shall be prepared and submitted in 10 working days or prior to final payment after completion of work specified in this section.

Recycling Activity Delivery Receipt; G.

The Contractor shall submit to the Contracting Officer a delivery receipt verifying recycling of all items to the Contracting Officer. Contractor shall be responsible to manifest in accordance with 40 CFR 261 and 761. Transportation shall be in accordance with 49 CFR 173 and 178.

1.6 LABELING AND RECORD KEEPING

Labeling and record keeping of regulated materials to be salvaged, recycled, incinerated, or placed in a landfill shall be in accordance with 40 CFR 262, 40 CFR 263, 40 CFR 264, and all other applicable Federal, State and local regulations. Bill of lading shall be prepared for each item to be shipped to recycling and/or destruction. Information shall include initial date of storage, generator's name and address, destination address and telephone number and the shipping weight.

1.7 SPILLS AND SAFETY

The Contractor shall prepare, maintain and implement a Spill Prevention Plan. The plan shall establish policies and procedures to prevent spills, minimize spill impact on its surroundings and methods to cleanup. The plan shall encompass all activities including at the site, transportation to recycling and/or destruction facilities. It shall address all the safety and health concerns in accordance with 29 CFR 1926 in event of a spill. It shall address clean-up requirements in accordance with 29 CFR 1910.120 paragraphs (b) through (o). Clean-up personnel shall meet the training requirements of 29 CFR 1910.38 (a); 1910.134; and 1910.1200. As a minimum, the following items shall be addressed in the plan: cleanup of spill by the Contractor; verification and approval of final clearance by the

Contracting Officer; personal protective equipment (PPE) and decontamination procedures; equipment and material required for cleanup; reporting required to notify state, local, and the Contracting Officer verbally and in writing. The plan shall be kept on-site. Spills of one pound or more of PCBs (typically from 16 or more ballasts) shall be reported within 24 hours to National Response Center (1-800-424-8802), the Contracting Officer and cleaned up immediately. The Contractor shall assume full responsibility for compliance with all Federal, state, and local regulations for workers protection, work practices, site safety, transportation and disposal.

1.8 STORAGE

A temporary storage area shall be provided by the Contractor and approved by the Contracting Officer. Storage time limits are 30 days for ballasts containing PCBs (40 CFR 761) and 1 year for thermostats containing Hg (40 CFR 273). All regulated materials must be removed from the site before final acceptance of this project by the Government.

1.9 TRANSPORTATION

Items containing regulated materials shall be transported by a licensed, hazardous waste hauler. The Spill Prevention Plan shall be enforced by the Contractor to prevent spillage in accordance with 49 CFR 171 and 40 CFR 173. The hauler shall not store regulated materials longer than 10 days in accordance with 40 CFR 263 and 40 CFR 273. Vehicle loading, vehicle placarding, waste tracking, notification and record keeping shall be in accordance with all applicable Federal, State and local regulations.

1.10 POTENTIAL BUYERS OF RECYCLED MATERIALS

Contractor shall use www.recycletexasonline.org to find potential buyer to recycle the PCB or wet-type (TCB and/or DEPH) ballasts or transformers.

The receiver of the PCB or wet-type (TCB or DEPH) ballasts or transformers shall have a RCRA Part B permit.

1.11 LICENSES AND PERMITS

Contractor shall furnish the licenses and permits listed in Part 1 paragraph SUBMITTALS.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 VERIFICATION OF REGULATED MATERIALS

Prior to initiation of work in this section, the Contractor shall field verify the actual locations, quantities and categories of items containing regulated materials. The Contractor shall notify the Contracting Officer of any discrepancies or conflicts before performing work.

3.2 WASTE MINIMIZATION, SALVAGE, AND RECLAMATION

The Contractor shall segregate wastes to salvage and reclaim all items to their maximum extent and practice waste minimization. The Contractor shall not dispose of any item in its entirety to the landfill or by incineration. Regulated materials shall be manifested in accordance with 40 CFR 262,

unless exemption is justified.

3.3 REMOVAL, HANDLING, AND PACKAGING

Removing, handling, and packaging shall be in accordance with COE EM 385-1-1.

3.3.1 Ballasts

The Contractor shall remove all ballasts from the lighting fixtures and place them into containers for shipping in accordance with 49 CFR 178. Leaking ballasts shall be placed in containers with absorbent material such as vermiculite or other suitable fire-retardant materials. Containers shall have affixed labels "Leaking [PCB] or [Non-PCB with TCB or DEPH] Ballasts". Intact ballasts shall be packed and labeled as "[PCB] or [Non-PCB with TCB or DEPH] Ballasts". A typical container shall not hold more than 220 ballasts or the total weight of each container shall not exceed 400 kilograms (or 882 pounds). PCB ballast shall be managed in accordance with 40 CFR 761. These containers shall be transported to a permitted facility for incineration or destruction. A receipt from the incineration facility shall be provided to the COR as a closure document.

3.3.2 Lighted Exit Signs, Smoke Detectors, Emergency lights and Rechargeable Batteries

The Contractor shall field verify locations of these items. They shall be carefully removed and securely packed in separate labeled containers. The container voids shall be filled with vermiculite or other suitable fire-retardant materials. Shipping labels "Used Lighted Exit Signs Contain Tritium (Potential Hazard: Low Radiotoxicity)" and "Smoke Detectors Contain Cesium (Potential Hazard: Fire and Explosion Risk)" shall be affixed on containers with the intact components. Emergency lights with used batteries shall be placed in separate container labeled as "Emergency Lights with Used Batteries (Potential Hazard: lead, cadmium, mercury)". Other rechargeable batteries shall be placed in a separate container labeled as "Used Batteries (Potential Hazard: lead, cadmium, mercury)". The containers shall be vented and voids shall be filled with vermiculite or other suitable fire-retardant materials. The Contractor shall turn in these containers to the Defense Reutilization and Marketing Office (DRMO) for recycling. The Contractor shall contact the DRMO to verify operating procedures for turning in items prior to removal of these items from the building structure and filling in the tracking document for final disposition.

3.3.3 Fluorescent Light Tubes and Lighting Fixtures

The Contractor shall remove the intact fluorescent light tubes from the lighting fixtures and place in the same boxes that held the replacement light tubes or other similar size containers that have box spacers to prevent breakage. Broken tubes shall be placed in containers in accordance with 49 CFR 178 and labeled as "Broken Fluorescent Light Tubes with Mercury." The containers with broken light tubes shall be manifested for transport and disposal in accordance with 40 CFR 262, 40 CFR 263, and 40 CFR 264. Fluorescent light tubes shall be transported by the recycling facility. The Contractor shall obtain written agreement from the recycling facility to transport the packaged light tubes. Metallic components of the lighting fixtures shall be recycled as scrap metal with other metallic components of the building structure. Plastic components of the lighting fixtures shall be segregated and recycled.

3.3.4 Mercury Bulb Thermostats

The Contractor shall remove and handle mercury bulb thermostats in accordance with 40 CFR 273. Leaking or broken ones shall be placed in a container with absorbent such as vermiculite and labeled as " Broken Mercury Bulb Thermostats". Intact bulb thermostats shall be packed and labeled as "Intact Mercury Bulb Thermostats." They shall be manifested for transportation and disposal in accordance with 40 CFR 262, 40 CFR 263, and 40 CFR 264.

3.3.5 ODC Units

The Contractor shall purge the units and handle ODC in accordance with 40 CFR 82 Subpart F prior to removal from existing locations. The salvaged refrigerant shall be recycled through the DRMO by the Contractor.

3.3.6 Not Applicable

3.3.7 Transformers

The Contractor shall verify the locations of transformers as shown on the electrical utility layout or demolition plans and obtain data plates information for the transformers to be removed. The Contractor shall coordinate with the Directorate of the Environment (DOE) that has access to the analytical data base of the transformers and obtain data plates information of the transformers to be removed. The Contractor shall perform sampling and analyses for PCB when no analytical results are available. Testing shall be authorized in writing by the COR in writing. Disconnection of electrical services shall be approved by the Directorate of Public Works and Logistics (DPWL)and/or the Contracting Officer. The Contractor shall prepare government Form 1340 and list transformers identification numbers, types, sizes, and attach PCB test results from the Directorate's data base or result from a currently licensed analytical laboratory (independent of the Contractor). A copy of Form 1340 shall be submitted to DOE and the Contracting Officer to schedule for pre-inspection. The Contractor shall remove and transport the transformers to a staging area approved by the COR. In accordance with 40 CFR 761.20, The Contractor shall provide containment at the staging area to prevent storm water pollution. The Contractor shall prepare manifests (EPA Form 8700-22)for both PCB contaminated transformers (with PCB levels greater than 50 parts per millions (ppm) but less than 500 ppm) and PCB transformers (with PCB levels equal to or greater than 500 ppm). After approval of pre-inspection, the Contractor shall haul all transformers with Form 1340s to a designated location for final removal by DRMO. The Contractor shall provide shipping description (which consists of RQ designation, shipping name, hazard class, UN identification number, packing group, and supplemental information) in accordance with 49 CFR 173.

3.3.8 Utility Poles

The Contractor shall verify exterior locations and sizes of wood poles. The Contractor shall coordinate with the Directorate of Public Work and Logistic (DPWL) to verify those used utility poles to be removed in this project. Utility poles shall be salvaged to the maximum extent possible by the Contractor. However, if they are disposed as waste material, the disposal facility receiving those wood poles shall have permit or written authorization by the Texas Commission on Environmental Quality (TCEQ) to receive wood poles which are typically contaminated with arsenic and/or creosote.

3.3.9 Not Applicable

3.3.10 Not Applicable

3.4 RECYCLING/DESTRUCTION FACILITY

The Contractor shall use EPA permitted recycling/destruction facility in accordance with 40 CFR 261, 40 CFR 268, and 40 CFR 270 and/or State permitted or registered facility which holds current environmental pollution liability insurance coverage.

3.5 CLOSURE REPORT

The report shall contain: (1) A signed cover letter certifying completion of work described herein, (2) A signed Statement of Compliance, appended herein, (3) A brief narrative of worker protection and waste removal, segregation, packaging, transportation, and ultimate method of disposal (i.e. recycled/reuse, incinerated, landfill, etc.), (4) A description of accidents, ruptures, leaks, subsequent response procedures and cleanup, and (5) A copy of final disposition document of each item including at least the following: notification, signed manifest of waste, signed certificates or receipts (Bill of Lading) from each recycling or destruction facility.

3.6 STATEMENT OF COMPLIANCE

The Statement of compliance follows this page.

STATEMENT OF COMPLIANCE

I hereby certify that:

(1) the appropriate state manifest form has been completely and properly filled out;

(2) the packing, marking, labeling and placarding of the waste meets all applicable regulations;

(3) the waste transportation, recycling, destruction and disposal meets all applicable Federal, State and local regulations.

Name_____

Title_____

Date_____

-- End of Section --

SECTION 16488

INSTRUMENTATION AND CONTROLS
AMENDMENT NO. 0002 & 0005

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

1.2 DEFINITIONS

Symbols, Definitions, and Abbreviations: All symbols, definitions, and engineering unit abbreviations utilized shall conform to IEEE 100-84, S50.1, and S51.1, where applicable.

1.3 SYSTEM DESCRIPTION

Design Requirements:

a. Provide analog field instruments with transmitters which condition the signal to output a 4-20mA signal linear to the measured variable.

b. Similar instruments shall be by the same manufacturer to the extent practical.

1.3.1 Supervisory Control and Data Aquisition System (SCADA)

The Supervisory Control and Data Acquisition System (SCADA) shall provide computer system monitoring functions, record historical data, and provide operator interfaces for control of plant and remote functions. The SCADA system includes, but is not limited to the:

1. Computer workstations designated Human Machine Interfaces (HMI's) and their interface to the Plant Control Network.
2. Plant Control Network,
3. Plant Control Network interfaces to Programmable Logic Controllers and other plant equipment,
4. Programmable Logic Controllers at remote sites and at plant
5. Radio communication equipment at remote sites and at plant

The Contractor shall employ the services of a qualified System Integrator with experience in providing computer based data acquisition systems for industrial control systems. [AM#2] (_____.)

Any system varying from these specifications as to principle of operation, control and indication features or suitability for the particular application shall not be accepted.

Instrumentation: Provide analog field instruments with transmitters which condition the signal to output a 4-20mA signal linear to the measured variable.

Similar instruments shall be by the same manufacturer to the extent practical.

1.4 PERFORMANCE REQUIREMENTS

Accuracy shall be as defined in ISA S51.1 and ISA S51.1, Sec. 5. Provide a complete and operating instrument installation with measurement accuracy determined by adding the accuracy of the element and the transmitter and any wiring to the field terminal enclosure of 0.75% of calibrated span or better , unless specified otherwise below, at any environmental condition specified.

1.5 PATENTS

If the manufacturer is required or desires to use any design, device, material, or process covered by letter, patent, or copyright, the manufacturer shall provide for such use by suitable legal agreement with the patentee or owner, and the prices bid hereunder shall, without exception, indemnify and save the Government from any and all claims for infringement by reason of the use of any such patented design, device, material, or process, or any trademark or copyright used in connection with any equipment to be furnished hereunder.

1.6 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Submit compact disc and color printouts of all screens for goverment approval.

Quality Control Data:

a. Design Data:
b. Test Reports:
c. Certificates:
d. Manufacturer's Instructions:
e. Manufacturer's Field Reports:

[AM#2] Qualifications:

Provide System Integrator's qualifications in accordance with Part 1 paragraph "Quality Assurance", subparagraph "Qualifications".

SD-03 Product Data

Instrument Installation Details
Instrument Specification Sheets See attached.
Certified Calibration Sheets

Complete and detailed instruction manuals on each item furnished including but not limited to all devices and instruments. Information to be contained in the instruction manuals shall include but not be limited to drawings, dimensions, manufacturer's recommendations, ratings, performance charts, power requirements, schematics, maintenance requirements and procedures, calibration recommendations and procedures, repair instructions, complete and recommended spare parts lists and related information.

a. Proposed tagging and attachment materials and methods.
b. Shop Drawings shall be submitted for approval by the Government.

The Contractor shall submit to the Government, for approval, Shop Drawings of the equipment he proposes to install to meet the Specifications. The Drawings shall be supported by notes or written directions as required to fully define the installation.

The submission shall be made as soon as feasible after award of the Contract and, in any event, shall be submitted and approval obtained before installation of the equipment. The Contractor shall furnish the Government with six (6) copies of the submission.

The information required on the Shop Drawings shall include, but is not necessarily limited to, the following:

a. Full and complete Specifications covering the equipment proposed to be furnished: G
b. Detail Drawings showing plan, network connections and elevation dimensions of the equipment proposed to be furnished: G
c. Guarantees of performance of the equipment proposed to be furnished: G
d. Nearest location of factory maintenance and service facilities that will be available to service the equipment offered: G

SD-11 Contract Closeout

Project Record Documents: G
Operating and Maintenance Data: G
Warranty: G

1.7 QUALITY ASSURANCES

1.7.1 Qualifications

The system integrator shall have a minimum of 5 years of experience with the equipment and software to be installed. The system integrator shall have a minimum of 10 years of experience in providing computer-based data acquisition systems for industrial control systems. The system integrator shall have a full-time staffed office within [AM#2] the continental United States.

1.7.1.1 Base Line Testing

Base-line testing shall be performed on all existing field instruments and any other equipment connected to the existing I/O. Testing is to be completed before any modification of existing control equipment. Equipment to be tested includes but, is not limited to: all field instruments such as level, pressure, or flow transmitters, and equipment such as motor starters, digital sensors, manual controls, detectors, and valves. Provide a minimum of 14 days notice to Contracting Officer before start of testing. The Government reserves the right to have the Contracting Officer be present during any testing and to verify the results. Tests shall be performed at the existing terminal cabinet. All inputs and outputs shall be tested to ensure that the signal conforms to the requirements of the actual PLC I/O cards used. A signal conditioner shall be provided for any input or output that does not meet this requirement. All inputs shall be tested to ensure that actuation of the equipment causes a corresponding signal at the terminal box. All outputs shall be tested to ensure that a signal at the terminal box causes a corresponding activation of the equipment. All analog inputs and outputs shall be tested for linear operation, scale, and offset. Six (6) copies of the test results shall be submitted to the Government in paper and electronic formats. Electronic formats allowed are Microsoft Excel, comma-separated-variable, Adobe PDF or as otherwise directed by Contracting Officer. Each test result shall include the site name, equipment/instrument name, equipment/instrument description, test procedure description, test results, scale and offset (for analog equipment), and shall be signed and dated by the tester.

1.8 DELIVERY, STORAGE, AND HANDLING

1. Packing and Shipping:

2. Acceptance at Site:

3. Storage and Protection: Delivery, storage, and handling shall be in accordance with manufacturers recommendation and the requirements of General and other sections herein.

1.9 PROJECT AND SITE CONDITIONS

Environmental Requirements: Instrumentation and control elements will be installed outdoors exposed to sun, rain and excessive humidity and shall be capable of continuous operation without significant reduction of their operating life under the following ambient conditions:

Temperature: -25 degrees C. to 80 degrees C.

Pressure: 650 mm Hg to 800 mm Hg

Relative Humidity: 20% to 100% condensing

Vibration Frequency: 10 - 2000 Hz.

Vibration Position: 1.5 mm peak-to-peak

Vibration Acceleration: 10 G.

Where the ratings of individual components cannot meet the requirements, provide suitable means of physical protection. Suitable physical protection shall consist of an assembly which meets the requirements listed, while limiting the ambient conditions at the non-conforming component to 90% of the component's rating (Example: A component rated for vibration at only 5 G. acceleration would be required to be combined with vibration isolation to limit the acceleration of the component to 4.5 G. when subjected to ambient acceleration of 10 G. from 10 - 2000 Hz).

Operating Environmental Conditions: All instruments and control devices provided shall be rated for continuous operation in their installed operating environment and shall be capable of continuous operation at the operating conditions without significant reduction of their operating life.

PART 2 PRODUCTS

2.1 [AM#2] INSTRUMENTS

Furnish instruments specified in Appendix 1 Instrument Specification Sheets. Instruments for services not listed shall be equal in quality, performance, and environmental and functional characteristics as instruments listed and shall be approved in writing by the Contracting Officer.

2.2 CONTROL PANEL MATERIALS

2.2.1 Enclosures for Indoor Use

Furnish and install NEMA 12 enclosures.

2.2.2 Enclosures for Outdoor Use

Furnish and install NEMA 12 stainless steel enclosures with NEMA 4 gaskets [AM#2] and top and side sun shields.

2.2.3 Nameplates

Each enclosure shall be identified by a nameplate including its designation and service name as specified. Local Control Panels shall be identified by a nameplate identifying the associated control panel. Panel mounted instruments and control devices shall be identified by a nameplate including the tag number and service name. Control devices shall be provided with manufacturer's standard legends indicating function (example: STOP, START, HAND-OFF-AUTO, etc.) Provide engraved, acrylic plastic laminate nameplates, 1/16-inch thick, 1" x 6" minimum for junction boxes and panels, sized to fit for control devices and stations, engraved in black letters on white face and punched for and fastened with self-tapping 10/32 stainless steel screws and silicone adhesive.

2.2.4 Grounding

Each enclosure shall be provided with a copper equipment grounding bar, ground lugs, and bonding cable and fittings as required. Ground control panels to earth with #2 stranded connectors and driven copper rods to less than 10 ohms.

2.2.5 Terminal Strips and Accessories

Provide DIN rail mounted terminal strips including fused terminals with blown fuse indication, ground terminals, terminal groups for each incoming or outgoing device circuit including group tag identifying the device and identified terminals for each incoming or outgoing wire. Provide terminal end, partition and separation plates as required. Provide pre-engraved vinyl marking strips with terminal and group identification as shown on the submittal drawings. Provide group tags and terminals or as indicated on the drawings or approved equals. Do not splice control wires. Provide DIN rail mounted relay bases with LED coil indicators and arc suppression for plug-base relays. Identify each terminal with the wire designator from the wire number i.e. "+", "-", "SH", "NO", "NC", "COM", "L1", "N", etc. Provide 20% spare terminals and I.D. tags of each designation. Provide 20% spare connectors, fittings, wire ties, labels and markers of each type provided.

2.2.6 Indicating Lights and Industrial Control Devices

Indicating lights and control devices shall be furnished as indicated with push-to-test feature. Use 120 VAC devices of the oil-tight, industrial duty type equal to Allen Bradley 800T or equal. Provide manufacturer's standard engraved legend plate suitable for 2 lines of 14 characters each for each device furnished. Provide custom engraving where function names indicated have no reasonable match with manufacturers standard engraving.

a. Normal run lights shall be steady, alarm lights indicating interlocks shall be flashing type. Three position switches shall be maintained contact unless otherwise indicated.

2.2.7 Relays

Provide relays as required to implement indicated control Functions. General purpose and time delay relays may be used within their ratings for logic, timing and sequencing but shall not be used to drive loads in excess of 80% of their contact "make" or "break" ratings. Provide interposing power relays to drive loads such as starters larger than NEMA size 1 and all other utilization equipment with loads greater than specified for general purpose and time delay relays. Provide relays rated to drive the load as required.

2.2.7.1 General Purpose Relays

Provide tube-base relays rated 120VAC, DPDT or 3PDT, 10 Amp contacts rated to break inductive loads of 3 Amperes. Provide Allen-Bradley 700 Type HA, Potter Brumfield or as indicated on drawings or equal. Provide additional relays as required to obtain sufficient numbers of contacts.

2.2.7.2 Time Delay Relays

Provide relays for which the time delay is based on the presence or absence of control voltage at the relay. Unless indicated otherwise provide DIP switch programmable multifunction relays including time delay on energization, time delay on de-energization or one-shot timing as indicated. Provide continuous control power to the relay if required, whether indicated or not. The shop drawings shall reflect the actual proposed connection and timing diagram for the specific relays to be provided. Provide relays rated

120VAC, DPDT or 3PDT, 10 Amp contacts rated to break inductive loads of 3 Amperes. Provide SSAC or approved equal tube-base relays.

2.2.7.3 Power Relays

Provide heavy-duty solenoid type relays with contacts rated not less than 10 amperes continuous at 300 volts AC. Provide a minimum of four reversible poles or four universal or double-throw poles. Relays shall be as manufactured by Allen Bradley, Type 700N, or approved equal.

2.2.8 Signal Converters and Isolators

Provide signal isolators as required for all new and existing circuits to provide standard controller inputs or outputs. Signal converters and isolators shall be as manufactured by AGM, Action Instruments, or approved equal.

2.2.9 [AM#2] Surge Protection

Provide surge protectors to protect RTUs and master PLC cabinet. Surge protector to be 120VAC, DIN-rail mounted, MOV-based, industrial grade and UL1449 Second Edition compliant. Provide Phoenix Contact, Weidmuller, Transtector or approved equal.

2.3 PROGRAMMABLE LOGIC CONTROLLER

The contractor shall furnish, install, configure, startup, and test the programmable controller to be located in each remote or master control. Provide controllers mounted inside the Control Panels to provide data acquisition functions as specified and shown.

The PLC controllers shall have the following characteristics:

a. Microprocessor based
b. 64K program memory size
c. Programmable including:
d. ladder logic
e. arithmetic functions
f. on-line configuration and program editing
g. PID for closed loop control
h. Control of up to 4096 input and output points
i. Built in 10BaseT Ethernet channel
j. Built in RS-232 channel supporting DF1 Full-Duplex communication, DF1 Half-Duplex Master/Slave communication, DH-485, and ASCII I/O
k. Real-time clock
l. Battery backed RAM
m. Flash EPROM memory
n. Input/Output capability as follows:

1. Discrete Inputs (120Vac) - must accept direct 120VAC power for status without using relays.
2. Discrete Outputs (120Vac)
3. Analog Inputs (4-20mA)
4. Analog Outputs (4-20mA)

The contractor shall furnish the following spare parts:

a. Two (2) Power suppl ies
b. Two (2)CPU modules
c. Two (2) I/O modules of each type furnished

Provide PLC inputs and outputs at each site of quantity and type shown on I/O List appended to this specification. Provide a minimum of 25% spare I/O points of each type at each site in addition to spare parts listed in this section.

Control Configuration: The controllers and computer shall be networked and programmed as indicated. Control and interlocking functions shall be implemented in the PLC, not the HMI.

Provide PLC with accessory EEPROM memory chip configured to clear errors and write the original program to the RAM memory chip when main control power is cycled.

In the event of loss of communications with the HMI, the PLC controller shall retain last setpoint and control at that setting until manually overridden or communications is restored.

The Programmable Logic Controllers (PLC) shall be Allen-Bradley SLC 5/05 or approved equal.

2.4 UPS SYSTEM

[AM#2] Furnish and install an Uninterruptible Power Supply (UPS) to power the secondary SCADA node. Furnish [AM#2] and install a UPS to power the primary SCADA node and master PLC cabinet.

a. Technical requirements:

1. 120V, 1-phase input
2. 120V, 1-phase output
3. Capacity: [AM#2] 650VA minimum for secondary SCADA node, 1500VA _____ minimum for primary SCADA node and master PLC cabinet
4. Runtime: [AM#2] 6 minutes full load / 20 minutes half load; 6 minutes at full load / 22 minutes at half load

The UPS shall have the following standard features:

1. Surge Protection, Cat. A and B ANSI/IEEE C62.41 and .45
2. UL 1449 listed.
3. Output Voltage regulation: "3% (ANSI C84.1.4)
4. Minimum Efficiency: 90% on-line
5. Continuous, no-break power.
6. Computer grade sine wave power (5% THD).
7. Rated for switch-mode power supplies for use with computer loads.
8. Automatic battery check.
9. Automatic inverter check (adjustable cycle time).
10. Monitor runtime during an outage and display value based on battery capacity with respect to load.
11. Electronic communications port for connection to HMI computer. UPS shall include Windows based software for monitoring

and diagnostic functions. Provide automatic orderly shutdown of HMI software upon depletion of UPS batteries.

12. Batteries and UPS in single enclosure.

Windows based software for monitoring functions and automatic shutdown shall be PowerChute or approved equal. Utilize Windows shutdown software connected to the UPS via standard RS-232 interface. The UPS shall be American Power Conversion (APC) or approved equal.

2.5 RADIO TELEMETRY SYSTEM

Radio System Installation: Radio systems shall be installed by a qualified radio system installer who holds all FCC or other licenses covering the installation and startup operation of the radio system. The installer shall have factory training or equivalent experience in startup and operation of the radio system specified.

The System Integrator shall be responsible for ensuring that any radios provided shall have been approved by the Government for spectrum supportability before being placed in operation. Additionally, the System Integrator shall be responsible for coordinating all radio frequency usage with the Contracting Officer and Fort Bliss' Office of Frequency Management.

Path Considerations: The system integrator shall adjust the orientation of directional antennas, transmit power, and variable attenuation to achieve a fade margin of 20dB.

Interference Considerations: The system integrator shall adjust the transmit power (primarily) and variable attenuation (secondary) to prevent causing interference to other radio systems. Each radio shall only radiate enough power to achieve the required 20dB fade margin.

Provide radio network RTU's and MTU with spare parts, path assessment, interface cards, UPS equipment, batteries, antenna, antenna coaxial cable, surge arrestors, cabinets, including subpanels, PLC, I/O cards and slots as scheduled in the drawings, power supply, drawings, radio transceiver, auxiliary terminal blocks and wire markers, connections, testing, related HMI configuration and database integration, coordination of outages and all materials, methods and labor to demonstrate the reliable operation of each RTU.

General: Radio System Installation: The system integrator shall place in satisfactory service a Radio Telemetry Network which efficiently conveys data from RTU's at field sites designated, by radio-modem to a master unit located as designated and thence by the Plant Control Network to the HMI's where the data can be processed as indicated. Radio systems shall be installed by a qualified radio system installer who holds all FCC or other licenses covering the installation and startup operation of the radio system. The installer shall have factory training or equivalent experience in startup and operation of the radio system specified.

The system integrator shall obtain in the Government's name any required FCC licensing and shall coordinate with the Contracting Officer.

Communications Protocols: The RTU's shall communicate to the master PLC and thence to the HMI in open DF1 protocol. The system integrator shall set up DF1 and RSLinx drivers in the PLC's and HMI with consideration to timing and polling issues. All communications shall enable 16bit Cyclic Redundancy Checking as a minimum for error checking and correction.

RTU radio modems shall be Esteem Model 192F or approved equal. Radio modems shall incorporate packet burst narrow band technology to establish a "radio area network" of up to 255 users on a single frequency. The network shall incorporate forward error correction and CRC error checking. Radio protocol shall be Carrier-Sensed-Multiple-Access (CSMA) communication protocol. The radio shall be able to operate as an operating node, a repeater node, or both simultaneously. The radio shall be able to read addressed DF1 packets [AM#2] received from another radio, store those packets, then forward those packets to the addressee. [AM#2] All radios shall operate on the same frequency or as otherwise directed by Contracting Officer. The radio shall have the following features:

internal non-volatile memory
19,200 bps RF data rate
400 to 420 MHz UHF operating frequencies
integral Digi-Repeater
Frequency of operation software programmable
Remote programmability of all features over the RF interface
Radio diagnostics program
 Radio self-test
Packet monitor
 Received signal to noise ratio
Received signal strength output
RS-232C, RS-422, and RS-485 communications
Second local port for local programming and diagnostics
 Point to point protocol
 Point to multipoint protocol
 Transparent protocol

The System Integrator shall furnish a fully functional, complete, reliable and robust radio telemetry system.

The System Integrator shall provide a minimum of 8 hours training on the radio telemetry system including demonstration of radio configuration and diagnostics software.

2.6 RADIO ANTENNA

Refer to Drawings for antenna types and locations. The contractor shall provide all masts, lightning suppressors, and other apparatuses required to make a complete and operable radio system.

2.6.1 Omnidirectional

Frequency range: 400 to 420 MHz.
Gain: 5 dB, minimum
Maximum Power Input: 100 watts
Lightning Protection: Direct ground protection to mast.
Front-to-Back Ratio: 20 dB, min.
Connector: Type N, female.

The contractor shall provide all masts, lightning suppressors, and other apparatuses required to make a complete and operable radio system.

2.6.2 Directional - Yagi

Frequency range: 400 to 420 MHz.
Gain: 10 dB, minimum
Maximum Power Input: 100 watts
Lightning Protection: Direct ground protection to mast.
Front-to-Back Ratio: 20 dB, min.
Connector: Type N, female.

The contractor shall provide all masts, lightning suppressors, and other apparatuses required to make a complete and operable radio system.

2.6.3 Mounting Hardware

Stainless steel clamps and hardware suitable for direct mount to antenna towers and water tank structure.

2.7 ANTENNA LIGHTNING PROTECTION

Coaxial connection to the radio enclosure shall be by means of a coaxial type bulkhead lightning arrester with type N connections. The lightning arrester shall be rated at 1 kilowatt with a minimum 500V and maximum 2000V breakdown voltage. Coaxial lightning arrester shall be PolyPhaser or equal .

2.8 TRANSMISSION CABLE FOR RTU RADIO

50-ohm Ultra low attenuation coaxial cable with Type N connections.

Feeder Coax: 5/8 inch foam dielectric heliax. Maximum attenuation: 1.05 dB/100 feet at 450 MHz.

Jumper Coax: [AM#2] 1/4 inch super flexible foam dielectric heliax. Maximum attenuation: [AM#2] 3.91 dB/100 ft at 450 Mhz.

Provide suitable grounding kits for cable as manufactured by Andrew Corp. Grounding kits shall be located at the top and bottom of the tower, and at 200ft intervals if tower is more than 200ft. Grounding kits shall be grounded to ground bars by a #2 solid copper jumper. Ground bars shall be grounded to each other and to the site's ground ring by #2 solid copper wire.

Mount coaxial cable to water tower and radio tower using all stainless steel hardware. Submit mounting details for approval.

Provide a section of 1/4-inch diameter "superflexible" transmission cable for routing within the RTU cabinet from the radio's antenna port to the enclosing cabinet's surge arrester connector.

2.9 HMI HARDWARE

The Human Machine Interface (HMI) Hardware shall consist of one primary SCADA node and one secondary SCADA node. The primary SCADA node shall be a

server-class windows-based PC. The secondary SCADA node shall be a workstation-class windows-based PC. The following represents the minimum configuration for current hardware and software.

Primary SCADA Node

Form Factor:	19" Rackmount
Processor(s):	Two (2) Intel Xeon processors,2.8GHz,
Front Side Bus:	400MHz
Memory :	4GB,DDR SDRAM
Hard Drive:	5 bay hot plug SCSI backplane with three 73GB Ultra 320 SCSI drives operating in RAID 5 configuration with PERC3 RAID controller
CD/DVD Drives:	4x DVD+RW/+R w/ CD-RW
Floppy Drive:	3.5" 1.44MB Floppy Drive
Operating System:	Microsoft® Windows® 2000, CD (Service Pack 5)
Power Supply:	2x500W Dual Redundant AC Power Supply
Network Card:	Dual onboard 10/100 Ethernet NICs with load balancing and failover
Modem :	56k PCI (Winmodem not allowed)
Monitor :	17" (16" vis) Flat CRT, 1024x768, .25 mm pixel pitch
Service:	3 Yr Same Day 4-Hour 5x10 On-Site Parts & Labor
Miscellaneous:	2-button w/scroll Intellimouse; keyboard; speakers; mouse pad
Application Software:	SCADA Server software, Autodialer software, Microsoft Office 2000 Pro with Access, McAfee VirusScan and PC Anywhere
Utility programs	as required to manage system re-start and recovery after a power or network failure
Accessories	The HMI computer shall be furnished with all required hardware, software and peripherals for operation and maintenance. These items include: All required software interfaces and drivers. All required cables and connectors Operation Manual (Owners' Guide)
Full documentation for all software	Software License Registration forms (Completed and mailed. Provide copies of all completed forms to the Government for records.) HMI Software:

Secondary SCADA Node

Form Factor:	Mini Tower
Processor(s):	Intel Xeon processor,2.8GHz,
Front Side Bus:	533MHz
Memory :	4GB,DDR SDRAM
Hard Drive:	146GB Ultra 320 SCSI drive
CD/DVD Drives:	4x DVD+RW/+R w/ CD-RW
Floppy Drive:	3.5" 1.44MB Floppy Drive
Operating System:	Microsoft® Windows® 2000, CD (Service Pack 5)
Power Supply:	460W
Network Card:	10/100 Ethernet NIC
Modem :	56k PCI (Winmodem not allowed)

Monitor :	[AM#2] 17" (17" vis) LCD Flat panel, 1024x768 native, 500:1 contrast
Service:	3 Yr Same Day 4-Hour 5x10 On-Site Parts & Labor
Miscellaneous:	2-button w/scroll Intellimouse; keyboard; speakers; mouse pad; non-integrated soundcard and video card
Application Software	SCADA Server software, Autodialer software, Microsoft Office 2000 Pro with Access, McAfee VirusScan and PC Anywhere
Utility programs	as required to manage system re-start and recovery after a power or network failure
Accessories	The HMI computer shall be furnished with all required hardware, software and peripherals for operation and maintenance. These items include: All required software interfaces and drivers. All required cables and connectors Operation Manual (Owners' Guide)

Full documentation for all software
Software License Registration forms (Completed and mailed. Provide copies of all completed forms to the Government for records.)

HMI Software:

The HMI Computers shall have an internal communications interface card for communication with the PLC control network. The communication card shall be approved by the PLC [AM#2] manufacturer and the HMI software manufacturer.

2.10 HMI SOFTWARE

Rockwell Software RSView, Wonderware Intouch, or Intellution Fix Dynamics, Development and Runtime software packages [AM#2] for both primary and secondary SCADA nodes and all required drivers and accessory software packages for graphical HMI, trending of all points, alarming of all points. HMI software shall be fully compatible with and specifically designed for Windows 2000 operating system.

Reports to include:

Daily [AM#2] ____ trend chart indicating all flows, (Avg., Min.,Max., Totalized)
Daily [AM#2] ____ trend charts indicating all levels, (Avg., Min.,Max., Totalized)
5 additional reports of the Government's request.

2.11 PLANT ALARMS

The Contractor shall install audible plant alarms for the Control System so that operators will be alerted to system alarms when they are not in the control room. Install one interior audible alarm in the building (not in the Control Room) and install one exterior audible alarm in a weatherproof housing. The alarms shall have adjustable volumes. The audible alarms shall be field located as directed by the Contracting Officer. These alarms shall be operated from a Programmable Logic Controller output. The HMI shall be configured with an alarm area designated for 'plant alarms'. The HMI plant

alarm area will allow any appropriate HMI database tag to be set to that alarm area. The HMI plant alarm area will set the PLC output for the alarms. The Contractor shall coordinate all alarm summary screens and alarm features with the Contracting Officer.

2.12 AUTODIALER

The Automatic Dialing and Voice Annunciation Alarm Management System shall consist of a true 32 bit Microsoft Windows based software. The Alarm Management System shall be capable of bi-directional communication with other 32 bit Application Software Packages. Software and hardware must be capable of accomplishing the following tasks:

a. Upon Alarm condition: facilitate the display of alarm information to the screen of a Windows based computer system. Must additionally be able to display alarm information to the screen while other Windows based application software is running.

b. Upon Alarm condition: facilitate the compilation and transmission of alarm information over standard telephone lines to residential or commercial sites, or cellular phones, provide for verbalization of alarm information and allow for the password secured remote acknowledgment of such alarms.

c. Allows for Voice Dial-in Connection via telephone line to facilitate the Acknowledgment of active alarms.

d. Allows for Voice Dial-in Connection via telephone line to facilitate the inquiry of and the alteration of values of digital or analog tags.

e. Both Voice Dial-in and Voice Dial-out access modes shall be protected by mandatory redundant password entry system.

f. Allow for the creation of "DDE Watchdog Alarms". A Watchdog Alarm is a special DDE monitoring function which makes it possible to test the connection and functionality of a DDE link to device drivers. Detection includes faulty or cut cabling to the device as well as loss of the DDE connection. Upon the activation of any Watchdog Alarm, facilitate the compilation and transmission of an alarm to any valid output media identical to either analog or digital alarms.

g. Autodialer Software Shall be 32 bit Microsoft Windows based in both configuration and execution modes. The installation process shall occur in the Windows environment and automatically install all required software onto the destination computer and create all necessary Windows groups and icons.

h. Configuration Software Shall be configurable to be compatible with 110, 300, 600, 1200, 2400, 4800, 9600, 19200 or 38400 BAUD Paging Systems and shall adhere to the TAP protocol standard. It shall be configurable to be compatible with most major brands of data modem by allowing individual configuration of baud rate, modem initialization string, dialing prefix, dialing suffix and modem hang-up strings and accommodate paging systems requiring "passwords".

i. Shall allow for the creation and maintenance of a "phone book" of destinations for alarm transmissions. The phone book shall be

independently configurable for and shall maintain day of the week, time of the day and type of transmission eligibility for each phone book entrant. The quantity of eligibility entries in the phone book shall be unlimited.

j. Shall provide for the creation of "Groups" consisting of selected entries from the Phone Book. A "Group" may be considered to be a logical grouping of alarms, based upon the type of transmission desired as a result of any alarm condition. Group configuration shall allow for:

1. Allow for selection of recipient list for alarm transmissions along with recipient priority determination.

2. Allow for user enable/disable of: printer output, datalogging to disk file, automatic acknowledgment upon return to normal of alarm condition, mandatory user acknowledgment of alarms.

3. Shall allow for the creation and maintenance of "reports" or organized collections of tags. Such reports may be Voice accessed via telephone line employing a mandatory password protection system. The report feature shall make it possible to inquire and receive a verbalization of the description of the tag requested, along with the current value. It shall also be possible to alter any analog or digital value through a verbalized verification process. This alteration process calls for the pre-configuration of the tag, making it available for inquiry and/or change. A triple redundant password protection scheme must be satisfied in order to change values.

k. Execution Software Shall be capable of displaying on screen, current alarm status and alarm history status of a minimum of 1500 simultaneous DDE or Direct Connected alarm tags, depending on Windows/Operating System limitations. Maximum is dependent upon number of free Windows "handles".. the more programs running at one time, the fewer the available handles.

l. Autodialer I/O database is direct connected to HMI process database to avoid duplication of tags for ease of maintenance.

m. Shall allow for manual transmission of user entered alphanumeric or numeric pages by selection of destination from the phone book and message entry.

n. Autodialer shall be Specter Instruments TeleDAC-50/32 or equal.

2.13 INSTRUMENT ACCESSORIES

2.13.1 Instrument and Control Device Tags

Each field mounted field device shall be identified by its unique tag number as it appears on the original P&I diagrams and the Instrument Loop Diagram. The tag number shall be stamped on a 1" x 2" stainless steel tag permanently attached to the instrument by braided stainless steel wire which has been sealed by an approved method such that the wire must be cut or the seal broken to remove the tag. The tag number shall not be stamped on the

nameplate of the instrument. This requirement shall be documented on the Instrumentation Specification Sheet.

2.13.2 Process Tubing

Stainless Steel, ASTM A 269, TP316, seamless, annealed, 1/2" x 0.065" W.T. minimum.

2.13.3 Pneumatic Supply Tubing

Stainless Steel, ASTM A 269, TP316, seamless, annealed, 1/2" x 0.065" W.T., 3/8" x 0.049" W.T. and 1/4" x 0.035" W.T. minimum.

2.13.4 Fittings

316 Stainless Steel ferrule type, SWAGELOCK or approved equal.

2.13.5 Pipe Stand Type Supports for Instrumentation

Pipe stands shall be hot dipped galvanized and welded fabrications with 2" sch. 40 pipe, 2" square tube x 0.188 inch thick, 3/8 zinc/cadmium plated hardware, 1/2 inch expansion anchors, 12 gage mounting channel and 1/4 inch thick steel plate as a minimums. Supply u-bolt or cable mounts as necessary. Acceptable alternatives include engineered pipe stand systems such as O'brien Saddlepak.

2.14 CALIBRATION

Order instruments factory calibrated to the range indicated on the loop diagram and with calibration sheets indicating certification of traceability to National Institute of Standards and Technology (NIST).

2.15 FABRICATION

1. Shop Assembly:

2. Shop and Factory Finishing:

3. Tolerances:

4. Materials of Construction: Provide 316 Stainless Steel for wetted and other parts unless otherwise specified.

2.16 SOURCE QUALITY CONTROL

1. Tests

2. Inspections

3. Verification of Performance

PART 3 EXECUTION

3.1 APPLICATION

3.1.1 Installation

Install sensing elements at the point of measurement and route sensing line or cable to the transmitter. Install transmitters 4'-6" above grade or platform in an easily accessible location adjacent to the sensor location. Mount on pipe stanchion or steel support designed for the purpose individually or grouped with other transmitters. Route signal cable in conduit from transmitter to terminal cabinet or control panel for termination to test terminals. Steel supports shall be in accordance with this Section, and all other sections and specification requirements. Process connections for instrumentation shall be in accordance with piping sections and all other specification requirements. Provide block valves at taps for pressure or sampling sensor lines. Provide plugged tees at taps suitable for rodding or blowing out taps. Make pipe taps with weldolet type fittings or equal. Install block valves suitable for the service and rated as the pipe at each tap, generally use NPT threaded ball valves. Use materials rated for the service. Transition to tubing for sensor runs. Use 1/2" OD 316 SS tubing or as shown on drawing details.

3.1.2 Flow instruments

[AM#2] Mount flow switch according to manufacturer's instructions with all hardware necessary. Flow switch to be paddle-type. Tap process pipe and provide all fittings necessary.

3.1.3 Pressure Instruments

Make pressure taps in top of pipe for gas service and side of pipe for liquid or steam service.

3.1.4 Pressure Guages

Use 1/2" NPT pipe and ball or needle valve for pressure guage taps. Mount guages vertically; provide 90 degree fitting, seal, snubber or siphon tube as required. Where 90 degree fitting is required, install a tee-fitting with plug.

3.1.5 Differential Pressure and Level Transmitters

Use 1/2" tubing and ball or needle valves for pressure taps. Slope tubing runs 1" per foot to drain the sensing line to the pipe where the transmitter is higher than the tap and to drain the line to the transmitter where the transmitter is lower than the tap. At the transmitter connection provide a valve manifold that can block, bleed, vent, purge and provide calibration ports to the transmitter. For gas service transmitters, route 1/2" tubing straight up from the tap for a minimum of 12" to a high point in the line, then with a minimum slope of 1" per foot to the transmitter connection. Provide an automatic condensate drain at the transmitter.

3.1.6 Temperature Instruments

Generally mount thermocouple assemblies in the side of the pipe at a minimum angle of 15 degrees up from horizontal and route thermocouple or RTD cable to the transmitter in conduit. Do not mount thermocouples absolutely horizontal or at angles below horizontal. Provide adequate clearance for removal of head assembly and extraction of sensor.

3.1.7 pH Elements

For pH elements mounted in sample lines, mount according to manufacturer's instructions in an insertion assembly which permits removal of the element while the process line is pressurized. Mount with the element vertical and in a trap to keep electrodes hydrated. Arrange taps and sensor lines to keep flow velocity at sensor below 10 ft./sec.

Mount all instrumentation according to manufacturer's instructions except as specified.

3.1.8 Tubing and Fittings

Install tubing and fittings in a neat, orderly and functional manner; level and plumb except as required, noted on approved drawings, or specified. Make offsets required for fittings or equipment level in the horizontal plane to prevent high or low spots.

3.1.9 Conduit and Fittings

Install conduit as required. Provide a cast body tee fitting at the instrument connections at The low point of all conduit runs below the instrument with a drain fitting for condensate. Make connections from instrument to tee with liquid-tight flexible conduit and use sealing compound inside the conduit and shrink-fit tubing over the outside of the connection to prevent entry of water into the instrument. Heat trace and insulate all liquid filled lines and the sensing body of all instruments connected to liquid service in exterior locations.

3.1.10 Calibration

Calibrate each and every instrument furnished under this contract, and fill out a signed and dated five point calibration sheet and install an initialed and dated calibration sticker.

3.2 SCADA

3.2.1 Graphical Screen Configuration Requirements

Provide a tree-type hierarchy menuing structure based on; plant overview, individual process or system overview, and detailed process drawings. Provide a menu button bar (composed of icons) which will allow the operator to quickly move between frequently used functions and coordinate these functions with the Plant Supervisor. Make provisions for and train operators in the operations of adding menu bar functions.

All alarms should be available to the operator at all times.

3.2.1.1 General Guidelines

The Contractor shall follow these general guidelines for building ALL graphical screens:

Use Instrument Society of America (ISA) standard symbols as indicated by the Process & Instrumentation Diagram Symbol Legend Symbols wherever possible, especially for drawing P&ID screens shown on the Plans.

Use consistent color schemes throughout. The status of the equipment shall be indicated by the color of the symbol shown on the display.

The following colors shall be used consistently in all displays to indicate the status of equipment:

Motors:

Called For - Blue
Running - Red
Off - Green
Failed - White
Signal Loss - Yellow (out of service)

Alarms:

High Level - Red
Low Level - Green
Signal Loss - Yellow (out of service)

Provide high quality graphic screens which use animated objects using dynamic levels, pipe flows, and status information. Pipes, tanks, vessels, and similar objects shall utilize animated color fill techniques where applicable (i.e. one-line figures are not acceptable).

All screens shall be demonstrated and the Contracting Officer may offer suggested screen layouts and features.

3.2.1.2 Configuration Requirements

The contractor shall provide the following specific configuration requirements to the human-machine interface:

Overall System:

[AM#2] System map showing all sites.
Active alarm summary page common to all screens.

Individual Systems

Develop multiple screens showing the [AM#2] _____ process at each site. One screen minimum per [AM#2] site.

Display status of levels, pumps and valves and all analog values [AM#2] graphically and numerically.

Develop auxiliary screens as follows:

Personnel Phone Directory
On-call personnel
Production personnel phone numbers
Emergency Phone Numbers
Individual Unit page summaries and Alarm summary page.
Develop a text page to allow for operator instructions, comments, or troubleshooting information.

Additionally the Government shall be able to provide specification of five additional but presently undefined screens, which will not exceed the complexity of any of the above.

Use appropriate symbols for process equipment that accurately shows the type of equipment.

Configure all analog points including PID controller set point, process variable, controller output and valve position variables for trending, (trend blocks) and configure screens to display all trend data. Include a trend screen, which allows the user to assign as many traces as he wishes by simply assigning a trace color to a tag number. Trend screens shall include a legend with the tag number, service [AM#2] , and pencolor.

3.2.1.3 Final Acceptance Test

The Contractor shall conduct a 10 day Final Acceptance test of the completed installation. The test shall start after the Contracting Officer has received marked record (as-built) drawings from the Contractor and when directed by the Contracting Officer. The contractors personnel shall be on site 24 hours each day during the acceptance test.

The system shall operate with 100 percent reliability during the test period. Failure shall be defined as the inability to control or indicate status of specified inputs or outputs or any specified function of the control systems as described herein caused by defective hardware or software furnished in this project. Failure of hardware or software shall require repair or remedy of the defect to the satisfaction of the Contracting Officer within a two hour period. If the problem cannot be repaired in this time, the test shall be aborted and restarted after the problem is corrected and when directed by the Contracting Officer. Restarting and satisfactory completion of the test shall be conducted at no additional cost to the Government.

The Contractor shall complete the Operations and Maintenance Manuals including all updated documentation of programmable devices to the satisfaction of the Contracting Officer.

The Contractor will be allowed two attempts at successfully completing the Final Acceptance Test. After that time, he will be become responsible to reimburse the Government for liquidated damages.

3.2.1.4 Service and Training

Manufacturers shall provide as part of the equipment cost sufficient days of service by a factory-trained service engineer specifically trained on the type equipment herein specified to assist the Contractor during installation and start-up. The service time shall be sufficient to place the units in satisfactory service and instruct the Government's personnel in proper operation and maintenance of the equipment.

A minimum of three (3) days' service Engineer time shall be provided.

Maintenance Instruction: Operating and maintenance instructions, along with a separate parts list, shall be furnished in three (3) copies to the Government. Operating instructions shall also incorporate a functional description of the system, including the system schematics which reflect "as-built" modifications. Maintenance requirements particular to the system shall be clearly defined, along with calibration and test procedures.

3.2.2 Control Sequence

The SCADA system shall provide automatic and manual operation both locally and remotely for each site within the water system, and for the water system as a whole as selected by the operator. When automatic control is selected, each pump station or well shall be activated based on the level in that pump's control tank. Setpoints shall be easily changeable by the operator through the HMI. Controllers at pump stations composed of multiple pumps shall locally, automatically coordinate the operation of each pump as directed by the Contracting Officer. [AM#2] Chlorine feed shall be controlled by the ON/OFF status of wells. (_____.) **[AM#5] The control tank for each pump station shall be easily changeable by the operator through the HMI. Initial control sequence shall match existing system or as otherwise directed by the Contracting Officer.**

In the absence of communication with the master controller (1318), the RTU's at 7094 (Beaumont), 4318 (Logan Heights), 11171 (Biggs), 3695 (Tobin), and 8102 (Dona Ana) shall control the operation of tanks and pumps within their respective areas as shown on the network topology drawing. These areas shall operate autonomously from the master controller and report all data to the master controller and also allow control from the master controller. This autonomous operation shall occur automatically and shall not require operator intervention in the event of communication failure with the master.

3.2.3 [AM#2] SCADA Construction Phasing

Retain existing system in operational order until existing operational capability is proven to exist in new system. Coordinate with Contracting Officer and water plant staff before removing any piece of existing SCADA equipment. Construct, install and fully configure HMI computers and master PLC cabinet before installation of RTUs. RTUs shall be fully constructed before field installation. Install RTU at nearby site of Contracting Officer's choice. Prove reliable communication and operation. Install RTUs first at Logan Heights Tank 4899, then, at Logan Heights Pump Station / Tank 4318. Prove operation of store and forward capability and robust communication from 4899, through 4318, to 1318 with simultaneous communication between 4318 and 1318. Furthermore, demonstrate communications failure between 4318 and 1318 with continuation of operations between 4899 and 4318. Next, install RTU at McGregor Communication Building 9600 and McGregor Tank 9494. Prove robust operation. After successful demonstration of these initial test sites to the satisfaction of the Contracting Officer, proceed with installation of remaining RTUs. Replace existing sub-masters only after all RTUs that communicate through that site have been replaced. New RTUs that communicate through a repeater shall temporarily communicate through another RTU or directly to 1318 until new repeater has been installed. RTUs at range camps shall all be installed together with minimal down-time to that system. Coordinate all work well in advance with Contracting Officer. After all RTUs have been installed demonstrate communication failures to each hydraulic system. (Logan, Beaumont, Biggs, Tobin, and each range camp). Communications failures shall allow continued communication between tanks and pump stations in each hydraulic system.

3.3 DEMONSTRATION

3.3.1 System Demonstration

The system shall operate with 100 percent reliability during the test period. Failure shall be defined as the inability to control or indicate status of specified inputs or outputs or any specified function of the control systems as described herein caused by defective hardware or software furnished in this project. Failure of hardware or software shall require repair or remedy of the defect to the satisfaction of the Contracting Officer within a two hour period. If the problem cannot be repaired in this time, the test shall be aborted and restarted after the problem is corrected and when directed by the Contracting Officer. Restarting and satisfactory completion of the test shall be conducted at no additional cost to the Government.

3.3.2 Final Acceptance Test

The Contractor shall conduct a 10 day Final Acceptance test of the completed installation. The test shall start after the Contracting Officer has received marked record (as-built) drawings from the Contractor and when directed by the Contracting Officer. The contractors personnel shall be on site 24 hours each day during the acceptance test.

a. The Contractor shall complete the Operations and Maintenance Manuals including all updated documentation of programmable devices to the satisfaction of the Engineer.

b. The Contractor will be allowed two attempts at successfully completing the Final Acceptance Test. After that time, he will be become responsible to reimburse the Government for liquidated damages.

3.3.3 Service

Manufacturers shall provide as part of the equipment cost sufficient days of service by a factory-trained service engineer specifically trained on the type equipment herein specified to assist the Contractor during installation and start-up. The service time shall be sufficient to place the units in satisfactory service and instruct the Government's personnel in proper operation and maintenance of the equipment.

a. A minimum of three (3) days' service Engineer tim shall be provided.

3.3.4 Maintenance Instruction

Operating and maintenance instructions, along with a separate parts list, shall be furnished in six (6) copies to the Government. Operating instructions shall also incorporate a functional description of the system, including the system schematics which reflect "as-built" modifications. Maintenance requirements particular to the system shall be clearly defined, along with calibration and test procedures.

3.3.5 Warranty

All equipment and workmanship furnished under this contract shall be guaranteed to be free of defects in materials and workmanship for a period of one (1) year from and after the date of final acceptance of the work by the Government, and any such defects which appear within the stipulated guaranty period shall be repaired, replaced or made good without charge.

This guarantee shall include the capacity and integrated performance of the component's parts.

3.4 INSTRUMENT SPECIFICATION SHEET

Level Indicating Transmitter: The transmitter shall meet the following specifications:

LEVEL INDICATING TRANSMITTER [AM#2] (LIT)

Range	[AM#2] 0-200 ft H2O
Operating Temperature	-40 degrees F to 185 degrees F
Input	Differential Pressure
Output	4-20mA dc user selectable for linear or square root output. Process variable superimposed on the 4-20mA signal, vailable to any host that conforms to the HART protocol.
Power Supply	12 to 45 Vdc
Features	3 valve stainless steel manifold
Display	Analog indicator scaled to match application
Suppliers	Rosemount 3051 or approved equal
Scope	Refer to Plans

3.3 INSTRUMENT SPECIFICATION SHEET

Submersible Level Transmitter: The transmitter shall meet the following specifications:

LEVEL TRANSMITTER [AM#2] (LT)

Range	[AM#2] 0-40 ft H2O
Operating Temperature	-5 degrees F to +140 degrees F
Input	Pressure
Output	4-20mA dc user selectable for linear or square root output.
Power Supply	9 to 32 Vdc
Accuracy	< plus or minus 0.25 percent of full scale
Features	3 valve stainless steel manifold
Display	Analog indicator scaled to match application

Suppliers	Druck PTX 1290 or approved equal
Scope	Refer to Plans

3.5 SCADA I/O POINT LIST

The Fort Bliss SCADA I/O Point List follows at the end of this section. [AM#2] This list was created from the existing as-built drawings and has some new I/O points added. Contractor to verify all existing physical I/O plus additional I/O required on new RTUs for determining I/O card requirements. Contractor shall provide HMI programming for all existing I/O and shall provide I/O cards, wiring and PLC programming for all existing physical I/O plus new plus 25% spare.

-- End of Section --